NEW WORLD PHOLCID SPIDERS (ARANEAE: PHOLCIDAE): A REVISION AT GENERIC LEVEL

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ferent: Deeleman-Reinhold (1986a) reported 28 undescribed species of *Belisana* Thorell from southeast Asia; the genus is still monotypic. In a recent species richness estimation study in a montane forest in Tanzania (L. Sørensen, N. Scharff and J. Coddington; personal commun.), the two most abundant spider species were pholcids, making up more than 3000 of the 9000 collected specimens.

The second point, the confused taxonomic situation mentioned above, is best conveyed by a few typical examples: the genus *Coryssocnemis* Simon is herein divided among six genera (plus some species incertae sedis), with only the type species left in *Coryssocnemis*. While the wastebucket category is arguably a temporarily useful concept that may help to keep related taxa monophyletic, it is of course useless when *all* taxa are wastebuckets: not only *Coryssocnemis*, but all major South American genera (*Blechroscelis* Simon, *Litoporus* Simon) are herein split up into several putatively monophyletic groups. This commonly practiced arbitrary assignment of species to genera is reflected in cases where males and females were assigned to different genera [e.g., *Coryssocnemis togata* (Keyserling) and *Blechroscelis coerulea* (Keyserling)], although sexual dimorphism in pholcids is usually restricted to organs that were not used to define genera. Many examples could be drawn from Mello-Leitão's extensive work in Brazil and neighboring countries. The culmination is probably Mello-Leitão's 1947b paper, where one species is described under two different generic and three different specific names, all of which are synonyms of a species the author had described 17 years earlier [*Blechroscelis aurantiacus* Mello-Leitão, 1930 (now *Mesabolivar*)]. Brignoli (1981) gave a fitting summary of this situation when he stated that "[there is] an extremely large number of species that are extremely difficult to identify, even at the generic level, from the existing literature."

Historically, this imbalance between apparent species richness and taxonomic chaos probably has several causes. One goes back to Eugène Simon himself, who on one hand provided the first useful classification of pholcids (Simon, 1893b), but failed in most cases to accompany his descriptions of new genera and species with drawings. It is thus not surprising that subsequent authors were unable to correctly assign new species. Another reason is the seemingly biblelike status acquired by Simon's (1893b) "Histoire Naturelle des Araignées." Instead of taking it as a highly valuable starting point, a working hypothesis waiting to be improved, the few authors who have published pholcid classifications since Simon (Petrunkevitch, 1928, 1939; Mello-Leitão, 1946) made only minor changes, without discussing the evidence for them, and in general these changes were for the worse. The only more serious attempt at a generic revision was started in the early 1970s by P. M. Brignoli (Brignoli, 1972b), who "after a comparatively short time had to abandon the project because too many important types were unavailable" (Brignoli, 1981). A third reason, as far as the New World is concerned, was the bias toward a few geographical regions, especially Mexico and the United States (through W. J. Gertsch's work), and southeastern Brazil (through C. de Mello-Leitão's work). This made it quite impossible to detect any relationships between the North and South American faunas. And finally, pholcids are in general not among the most easily collected spiders, as they often effectively bounce out of sight, or are cryptic, or tiny with bodies between 1 and 2 mm, or have long entangling legs, or all of the above. The sometimes rather fortuitous way pholcids end up in collections is nicely illustrated by the newly described *Mecoloesthus hoti*, n. sp., whose single known specimen (according to the label) "fell from overhead vegetation into dugout canoe" in the remote Venezuelan Amazonas.

Whatever the historical reasons, the arbitrary assignment of poorly described new species to genera, and the geographic bias toward Mexico and Brazil made it necessary to both redescribe many species and to describe many new ones, especially from underrepresented regions. As a result, it was not feasible in the time available to substantially include Old World taxa, and even in the New World, the present work is heavily biased toward South America. Other than the limited resources, this seems justified by the observation that on a generic level, the New and Old World pholcid faunas have little in com-

ABSTRACT

New World pholcids are revised at the generic level, with an emphasis on South America. A total of 47 extant genera occur in the New World, 22 of which are newly described. A preliminary key to the genera of the New World is presented. Redescriptions are given for 11 genera and for 59 species, and 106 species are newly described. Three generic names and 14 specific names are newly synonymized (see below). A numerical cladistic analysis is performed using a matrix of 61 taxa (48 of them New World pholcids) and 61 morphological characters. The main results of the analysis are as follows: (1) Pholcids are strongly supported as a monophyletic group. (2) Pholcids are separated into the following clades, which are tentatively named to emphasize their character as a working hypothesis: "ninetines," "pholcines" (*Metagonia* Simon and the *Pholcus* group sensu Huber), "holocnemines" (*Holocnemus* group sensu Timm, *Artema* Walckenaer, *Physocyclus* Simon, and *Priscula* Simon), and the "New World clade." Their interrelationships are not definitively resolved. (3) New World pholcids are an assemblage of representatives of all major clades within the family, but most genera are part of the New World clade, which is the only clade restricted to the New World. (4) A hypothesis concerning the evolutionary transformation of characters is given for 41 of the 54 traits scored that vary among pholcids.

The following names are newly synonymized: *Anomalaia* González-Sponga, 1998, with *Metagonia* Simon, 1893; *Blechroscelis* Simon, 1893, with *Priscula* Simon, 1893; *Myrmidonella* Berland, 1919, with *Ninetis* Simon, 1890; *Blechroscelis coeruleus* (Keyserling, 1891), with *Coryssocnemis* [now *Mesabolivar*] *togatus* (Keyserling, 1891); *Blechroscelis irroratus* Mello-Leitão, 1947, *Psilochorus browningi* Roewer, 1951, and *Blechroscelis virescens* Mello-Leitão, 1947, with *Blechroscelis* [now *Mesabolivar*] *aurantiacus* (Mello-Leitão, 1930); *Blechroscelis viridis* Mello-Leitão, 1918, with *Litoporus* [now *Mesabolivar*] *brasiliensis* (Moenkhaus, 1898); *Hypsorinus conwayi* Mello-Leitão, 1947, with *Priscula binghamae* (Chamberlin, 1916); *Priscula ranchograndensis* González-Sponga, 1996, with *Priscula venezuelana* Simon, 1893; *Litoporus abrahami* Mello-Leitão, 1947, with *Coryssocnemis* [now *Litoporus*] *uncatus* (Simon, 1893); *Litoporus coccineus* Simon, 1893, *Litoporus imbecillus* (Keyserling, 1891), and *Litoporus fulvus* Moenkhaus, 1898, with *Litoporus* [now *Mesabolivar*] *luteus* (Keyserling, 1891); *Micromerys occidentalis* (Mello-Leitão, 1929), with *Micropholcus fauroti* (Simon, 1887); *Pholcus dubiomaculatus* Mello-Leitão, 1918, with *Pholcus phalangioides* (Fuesslin, 1775); *Physocyclus dubius* Mello-Leitão, 1922, with *Physocyclus globosus* (Taczanowski, 1874).

INTRODUCTION

One of the major incentives for this study was the gross imbalance between the apparent diversity and species richness of pholcid spiders on one hand, and the seemingly hopeless taxonomic situation within the family on the other hand, especially regarding the Neotropics. The first point has been made clear in a number of recent, scattered studies that have shown that throughout the tropics, pholcids are not only vastly more diverse than suggested by the number of nominal species, but that in some areas they are even among the dominant web-building spider families. For example, while only five pholcid species were previously recorded from Colombia (two of them were actually collected in Hamburg from bananas shipped from Colombia: Schmidt, 1956), a spider survey in a single state (Departamento del Valle) yielded a total of 52 morphospecies, only one of which could be identified (Florez, 1996). In another faunistic study in northern Peru, Silva (1996) reported over two dozen morphospecies from a restricted rainforest area, while only four species were previously recorded from all of Peru. Species numbers have increased tremendously in the few cases where more or less comprehensive surveys were made (e.g., Gertsch, 1982, who described 44 new species of *Anopsicus* Chamberlin and Ivie in a region where only 19 were previously known; Huber, 1998c, who described 10 new species of *Modisimus* Simon in Costa Rica, where only one was previously recorded). There are hints that the situation in the Old World is not much dif-

mon, a claim made previously by Brignoli (1981) and Huber (1998d), and substantiated herein by the cladistic analysis. Moreover, a similarly strict separation occurs between the faunas of North America and South America, with very little overlap in Panama and western Colombia, and on the Lesser Antilles. Finally, the genera of North and Central America, and possibly also the Old World genera, seem much better defined, or are at least easily assignable to well-defined genus groups (such as the Old World *Pholcus* group).

Even with this relative restriction to South America (which I abandoned only in the cosmopolitan and possibly monophyletic ninetines because of their assumed importance as the most basal taxon within Pholcidae), it was necessary to carefully select species for description, especially from collections I received late during the course of this study. In a few cases, such as ninetines and *Priscula*, I initially intended to prepare comprehensive revisions, but this soon proved unfeasible and adverse to the general purpose of this study. This means that even the few collections studied still contain many dozens of undescribed species. The species numbers given in the descriptions of genera can thus hardly be used to infer the relative diversity of genera, and are certainly not usable to estimate total species numbers for any taxon. Even though this restriction to South America was not applied to the cladistic analysis, the cladogram is explicitly proposed as a working hypothesis for several reasons discussed below.

MATERIALS AND METHODS

This work is based on material from the following collections:

AMNH	American Museum of Natural History, New York
BMNH	Natural History Museum, London
CAS	California Academy of Sciences, San Francisco
CCR	Collection Carles Ribera, Barcelona
CUC	Cornell University Collection, housed in AMNH, New York
FMNH	Field Museum of Natural History, Chicago
IRSB	Institut Royal des Sciences Naturelles de Belgique, Brussels
MACN	Museo Argentino de Ciencias Naturales, Buenos Aires
MCN	Museu de Ciências Naturais, Porto Alegre, Rio Grande do Sul
MCP	Pontifíca Univ. Católica do Rio Grande do Sul, Porto Alegre
MCZ	Museum of Comparative Zoology, Cambridge
MLP	Museo de La Plata, La Plata
MNHN	Muséum National d'Histoire Naturelle, Paris
MNRJ	Museu Nacional do Rio de Janeiro, Rio de Janeiro
MUSM	Museo de Historia Natural, Lima
MZF	Museo Zoologico de "la Specola," Firenze
MZSP	Museu de Zoologia da Universidade de São Paulo, São Paulo
QMB	Queensland Museum, Brisbane
SMF	Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt
SMNK	Staatliches Museum für Naturkunde, Karlsruhe
UCR	Universidad de Costa Rica, San José
USNM	National Museum of Natural History, Washington

All new species are based on a male holotype, and the description of the male always refers to this specimen. Only SEM data (tarsal organ, epigastric system, spinnerets) are not taken from the holotype; all other exceptions are explicitly mentioned in the text.

Measurements are in millimeters unless noted otherwise. One or two decimals are given, depending on the assumed accurateness of the measurement. Carapace length was measured from the anterior face of the ocular area to the rear margin of the carapace medially, excluding the clypeus. I use the term carapace for the dorsal part of the prosoma. Total length is the sum of carapace and opisthosoma length, regardless of the petiolus. Both are approximate measures just intended to give an idea of the size of the spider. More accurate measures are those of carapace width (maximum width) and leg segment length, especially tibia length (measured dorsally), which are to the nearest 0.02 mm (shortest legs, prosoma) to 0.1 mm (longest legs). The ratio of tibia 1 length/width is a measure of the robustness of the legs, and has a precision of about ± 2.

All drawings were done with a camera lucida, either on a dissecting microscope (Ni-

kon SMZ-U), or on a compound microscope (Wild). Epigyna were cleared in warm KOH solution, transferred to water, and temporarily mounted for drawing. For SEM photos, specimens were cleaned ultrasonically, critical point dried, gold sputtered, and examined and photographed in a Hitachi S-570, a Zeiss DSM 9-10, and a Hitachi S-4700 cold emission SEM.

Collection data were usually simply copied from the labels which is the reason for the variable reporting of latitude and longitude data, and for the inconsistency in distances and elevations (km versus mi, m versus ft).

The numerical cladistic analysis was done using NONA, version 1.8 (Goloboff, 1993); Hennig86, version 1.5 (Farris, 1988); and Pee-Wee, version 2.8 (Goloboff, 1997). Trees were examined in Clados, version 1.2 (Nixon, 1992). See Phylogenetics for details of the analysis.

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PHYLOGENETICS

TERMINAL TAXA

The following is the complete list of taxa scored for the cladistic analysis, including origin and deposition site of the specimens studied. Outgroups were chosen to represent both the putative sister taxon of Pholcidae (Diguetidae + Plectreuridae; see Platnick et al., 1991), and spiders that resemble pholcids in some general way (Filistatidae, Ochyroceratidae).

Filistatidae	
1. *Kukulkania hibernalis* (Hentz)	Costa Rica: San José Prov. (UCR)
Ochyroceratidae	
2. *Ochyrocera* sp.	Costa Rica: San José Prov. (AMNH)
Diguetidae	
3. *Diguetia signata* Gertsch	USA: Arizona, Yuma Co. (AMNH)
Plectreuridae	
4. *Plectreurys tristis* Simon	USA: Arizona: Tucson (AMNH)
Pholcidae	
5. *Metagonia argentinensis* Mello-Leitão	Brazil: Rio Grande do Sul (MCN)
6. *Metagonia rica* (Gertsch)	Costa Rica: San José Prov. (UCR)
7. *Metagonia delicata* (O. Pickard-Cambridge)	Nicaragua: Bluefields (UCR)
8. *Metagonia globulosa*, n. sp.	Peru: Loreto: Rio Samiria (MUSM)
9. *Pholcus phalangioides* (Fuesslin)	USA: San Francisco (AMNH)
10. *Leptopholcus delicatulus* Franganillo	Cuba: Oriente (AMNH)
11. *Spermophora senoculata* (Dugès)	USA: New York City (AMNH)
12. *Micropholcus fauroti* (Simon)	USA: Texas: Edinburg (AMNH)
13. *Ninetis minuta* (Berland)	Kenya: Kilifi (AMNH)
14. *Ibotyporanga naideae* Mello-Leitão	Brazil: Goias: Tocantins (MCN)
15. *Galapa baerti* (Gertsch)	Ecuador: Galápagos Isl. (IRBS)
16. *Aucana platnicki*, n. gen., n. sp.	Chile: Coquimbo (AMNH)
17. *Aucana kaala*, n. gen., n. sp.	New Caledonia: Prov. Nord (AMNH)
18. *Pholcophora americana* Banks	USA: California: Placer Co. (AMNH)
19. *Tolteca hesperia* (Gertsch)	Mexico: Oaxaca (AMNH)
20. *Papiamenta levii* (Gertsch)	Netherlands Antilles (MCZ)
21. *Chisosa diluta* (Gertsch)	USA: Texas: Brewster Co. (AMNH)
22. *Priscula binghamae* (Chamberlin)	Bolivia: La Paz (AMNH)
23. *Priscula ulai* González-Sponga	Venezuela: Mérida (AMNH)
24. *Physocyclus globosus* (Taczanowski)	Costa Rica: San José (UCR)
25. *Physocyclus mysticus* Chamberlin	Mexico: Baja California (AMNH)
26. *Artema atlanta* Walckenaer	USA: Arizona (AMNH)
27. *Smeringopus pallidus* (Blackwall)	Costa Rica: San José Prov. (AMNH)
28. *Crossopriza lyoni* (Blackwall)	India: West Bengal (AMNH)
29. *Holocnemus pluchei* (Scopoli)	Spain: Almeria (AMNH)
30. *Psilochorus pullulus* (Hentz)	USA: Arkansas (AMNH)
31. *Psilochorus rockefelleri* Gertsch	USA: Arizona (AMNH)
32. *Anopsicus zeteki* (Gertsch)	Panama: Chiriquí Prov. (UCR)
33. *Modisimus guatuso* Huber	Costa Rica: San José Prov. (UCR)
34. *Modisimus culicinus* (Simon)	Costa Rica: San José (UCR)
35. *Ixchela furcula* (F. O. Pickard-Cambridge)	Guatemala: Dept. Sololá (UCR)
36. *Ixchela abernathyi* (Gertsch)	Mexico: Nuevo León (AMNH)
37. *Aymaria conica* (Banks)	Ecuador: Galápagos Isl. (AMNH)
38. *Aymaria calilegua*, n. gen., n. sp.	Argentina: Jujuy (AMNH)
39. *Chibchea ika*, n. gen., n. sp.	Colombia: César (AMNH)
40. *Chibchea salta*, n. gen., n. sp.	Argentina: Salta (AMNH)
41. *Chibchea araona*, n. gen., n. sp.	Bolivia: Oruro (AMNH)
42. *Mesabolivar junin*, n. sp.	Peru: Junin (AMNH)
43. *Mesabolivar eberhardi*, n. sp.	Colombia: Meta (UCR)
44. *Mesabolivar aurantiacus* (Mello-Leitão)	Brazil: Amazonas: Manaus (MCZ)
45. *Mesabolivar cyaneotaeniatus* (Keyserling)	Brazil: São Paulo (MCZ)
46. *Carapoia fowleri*, n. sp.	Brazil: Amazonas: Manaus (MCZ)
47. *Coryssocnemis simla*, n. sp.	Trinidad: Arima Valley (AMNH)
48. *Coryssocnemis guatopo*, n. sp.	Venezuela: Miranda (AMNH)
49. *Mecoloesthus longissimus* Simon	Venezuela: Miranda (AMNH)
50. *Mecoloesthus taino*, n. sp.	Lesser Ant.: Guadeloupe (AMNH)
51. *Waunana modesta* (Banks)	Panama: Canal Zone (MCZ)

52. *Pisaboa silvae*, n. gen., n. sp.	Peru: Loreto: Samiria (MUSM)
53. *Pomboa pallida*, n. gen., n. sp.	Colombia: Dept. del Valle (MCZ)
54. *Litoporus lopez*, n. sp.	Colombia: Meta (MCZ)
55. *Litoporus dimona*, n. sp.	Brazil: Amazonas (MCZ)
56. *Otavaloa angotero*, n. gen., n. sp.	Ecuador: Napo (AMNH)
57. *Otavaloa piro*, n. gen., n. sp.	Peru: Madre de Dios (MUSM)
58. *Tupigea nadleri*, n. gen., n. sp.	Brazil: Espírito Santo (AMNH)
59. *Tupigea lisei*, n. gen., n. sp.	Brazil: Santa Catarina (MCP)
60. *Canaima arima* (Gertsch)	Trinidad: Arima Valley (AMNH)
61. *Blancoa piacoa*, n. gen., n. sp.	Venezuela: Delta Amacuro (AMNH)

Twenty-seven pholcid genera are not included in the cladistic analysis for the following reasons: First, the genera *Belisana*, *Calapnita*, *Micromerys*, *Panjange*, *Paramicromerys*, *Smeringopina*, *Spermophorides*, and *Uthina* are exclusively Old World genera, belonging to the *Pholcus* group sensu Huber (1995). Since the emphasis of this paper is on the New World fauna, and the monophyly of the *Pholcus* group is corroborated by the cladistic analysis (appendix 2: node 57), the inclusion of further genera seemed beyond the scope of this work.

Second, there was no material available to me for the following genera: *Mystes* (monotypic, only female known; possibly a ninetine); *Pholciella*, *Pholcoides* (both monotypic, only females known; position unclear); *Ceratopholcus* [monotypic; probably part of the *Holocnemus* group sensu Timm (1976)]; *Stenosfemuraia* (probably a representative of the New World clade); *Serratochorus* (only male holotype known, from Dominican amber; possibly a ninetine); *Holocneminus* and *Trichocyclus* (position unclear). Of these, only *Stenosfemuraia* and *Serratochorus* are New World genera.

Third, I had too little material available to score essential SEM characters for a number of genera. Most of them are treated in the taxonomic section below, and the possible phylogenetic affinities are discussed there (*Kaliana*, *Kambiwa*, *Enetea*, *Guaranita*, *Nerudia*, *Tainonia*, *Teuia*, *Gertschiola*). The Cuban endemic *Bryantina* is close to, or a synonym of, *Modisimus*; the Old World genus *Hoplopholcus* is probably part of the *Holocnemus* group sensu Timm (1976).

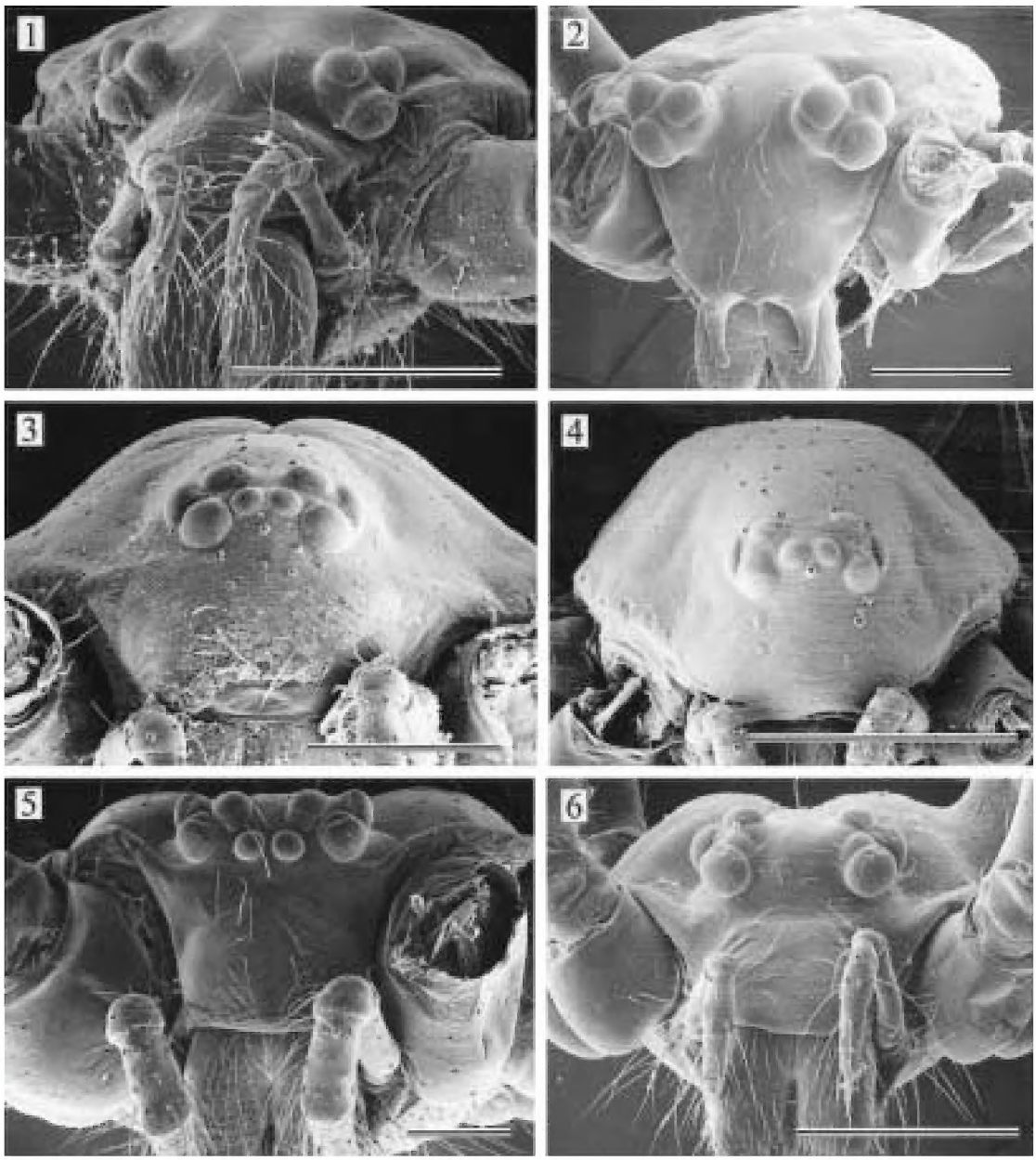
CHARACTERS SCORED

Apart from a listing of all characters scored, this section also provides a hypothesis for the evolutionary transformation of each character, anticipating the results of the cladistic analysis. Even though it should be obvious, I want to emphasize that the shorthand "state x is primitive" stands for "the cladistic analysis suggests that state x is plesiomorphic within Pholcidae." By default I always refer to the two preferred topologies found using equally weighted characters (see Cladistic Analysis below). Whenever these two topologies, or different optimizations within them, suggested different plesiomorphic character states, this is explicitly mentioned (characters 2, 27, 31, 32, 34, 55, 60). The additional topologies found using successive weighting are only mentioned if they suggested alternative or additional evolutionary transformations (characters 3, 6, 10, 44).

PROSOMA

Character 1. Eye number: *(0) eight; (1) six. Pomboa pallida* has only pigment spots in place of the anterior median eyes (AME), but is scored as "0" because all known congeners have eight eyes. The primitive condition (eight eyes) was defined a priori by making it a criterion for tree selection (see Cladistic Analysis below). The AME have been lost independently more often than suggested by the present data set, for example within *Leptopholcus* Simon, *Modisimus* Simon, *Chibchea*, n. gen., *Pomboa*, n. gen. (Note that the node uniting *Anopsicus* and *Modisimus* is an artifact resulting from the fact that only six-eyed representatives of *Modisimus* are included in the matrix.)

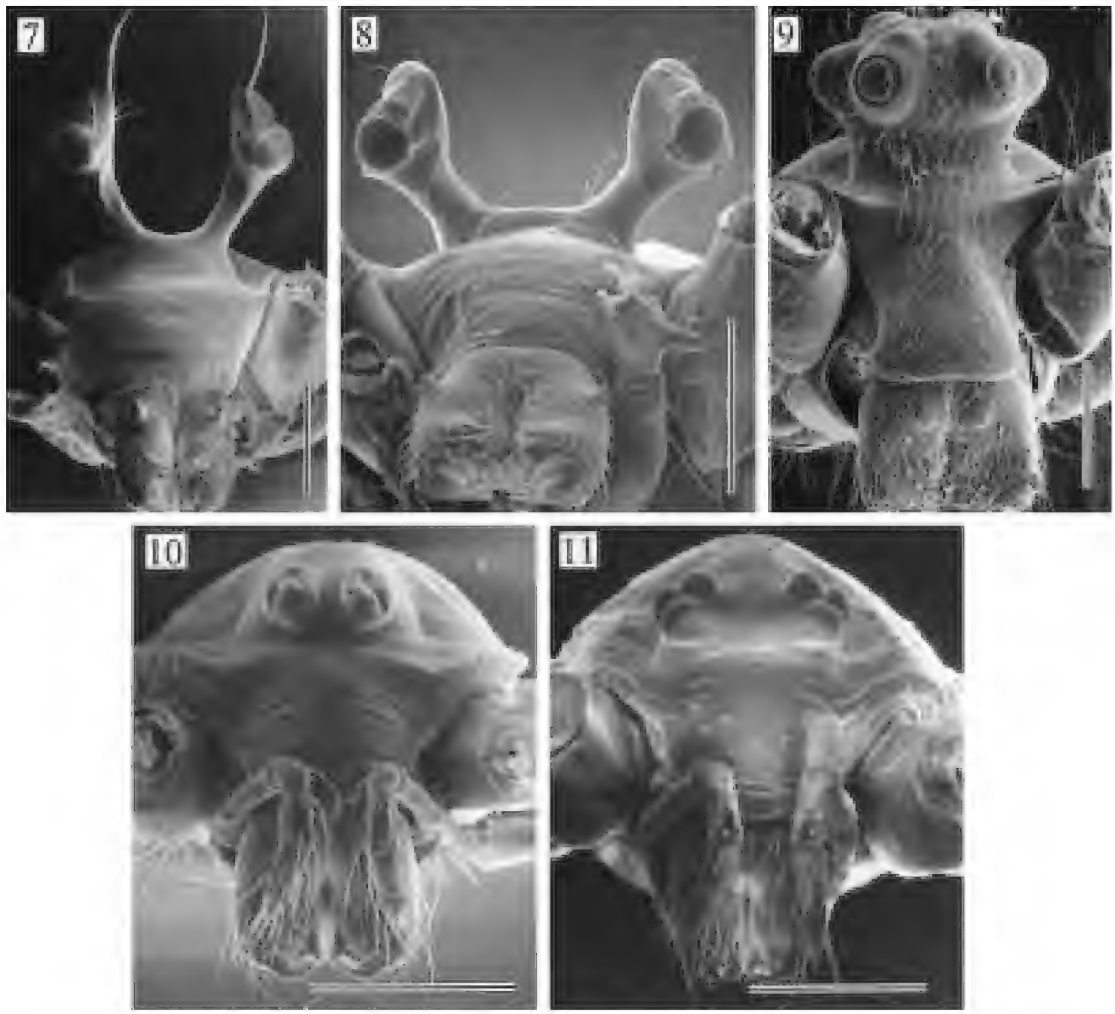
Character 2. Distance between posterior median eyes (PME): *(0) > 1.75 × diameter of PME; (1) < 1.75 × diameter of PME.* The primitive condition is ambiguous: in one of the preferred topologies, state (1) unites all



Figs. 1–6. Carapace shape and eye pattern, frontal view. **1**. *Metagonia delicata* (O. Pickard-Cambridge), female. **2**. *Metagonia maldonado*, n. sp., male. **3**. *Papiamenta levii* (Gertsch), female. **4**. *Ninetis namibiae*, n. sp., female. **5**. *Holocnemus hispanicus* Wiehle, female. **6**. *Tupigea lisei*, n. gen., n. sp., female. Scale lines: 0.3 mm.

pholcids except pholcines (ambiguous optimization); in the other topology, state (1) is primitive, and state (0) evolved independently in pholcines and in the New World clade (*Litoporus* Simon, *Pomboa*, n. gen.).

Character 3. Distance between PME and anterior lateral eyes (ALE): *(0) < 0.55 × diameter of PME; (1) > 0.55 × diameter of PME.* This measure is roughly equivalent to the previously widely used curvature of eye rows. Both measures of course depend on the angle at which the eyes are viewed,



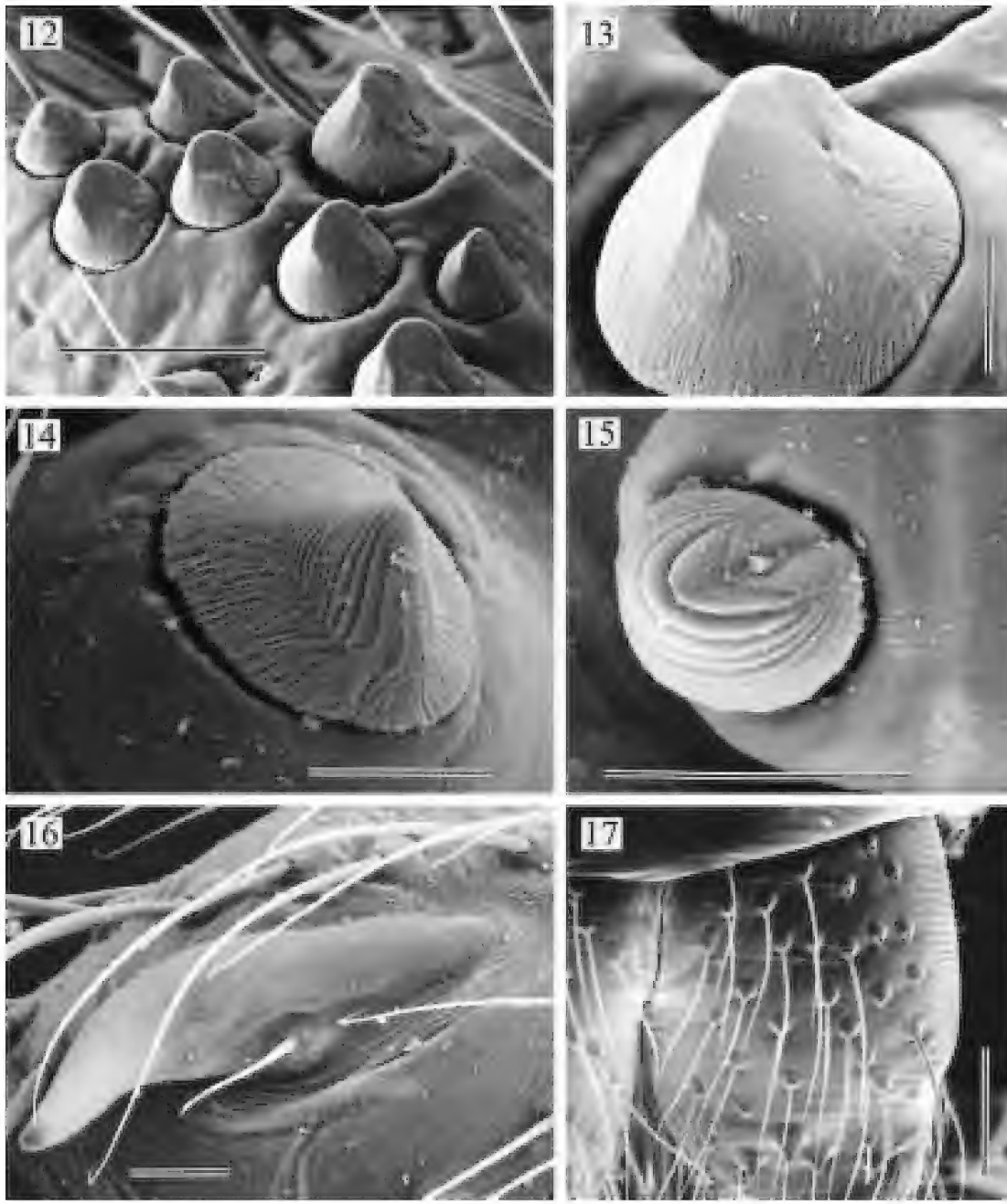
Figs. 7–11. Carapace shape and eye pattern, frontal view. **7**. *Uthina* sp., male from Sumatra. **8**. Unidentified genus and species (*Pholcus* group), male from Sumatra. **9**. *Modisimus dominical* Huber, male. **10**. *Anopsicus zeteki* (Gertsch), female. **11**. *Spermophora senoculata* (Dugès), female. Scale lines: 0.3 mm.

but this angle is more easily standardized for eye diameter and interocular distance than for eye row curvatures. In the analysis using equally weighted characters, state (0) is primitive and a possible synapomorphy of Pholcidae; state (1) is characteristic for the South American genera of the New World clade and has evolved, apparently independently, also in *Modisimus*, *Physocyclus* Simon, and *Priscula* Simon. In the analysis using successive weighting, the primitive condition is ambiguous.

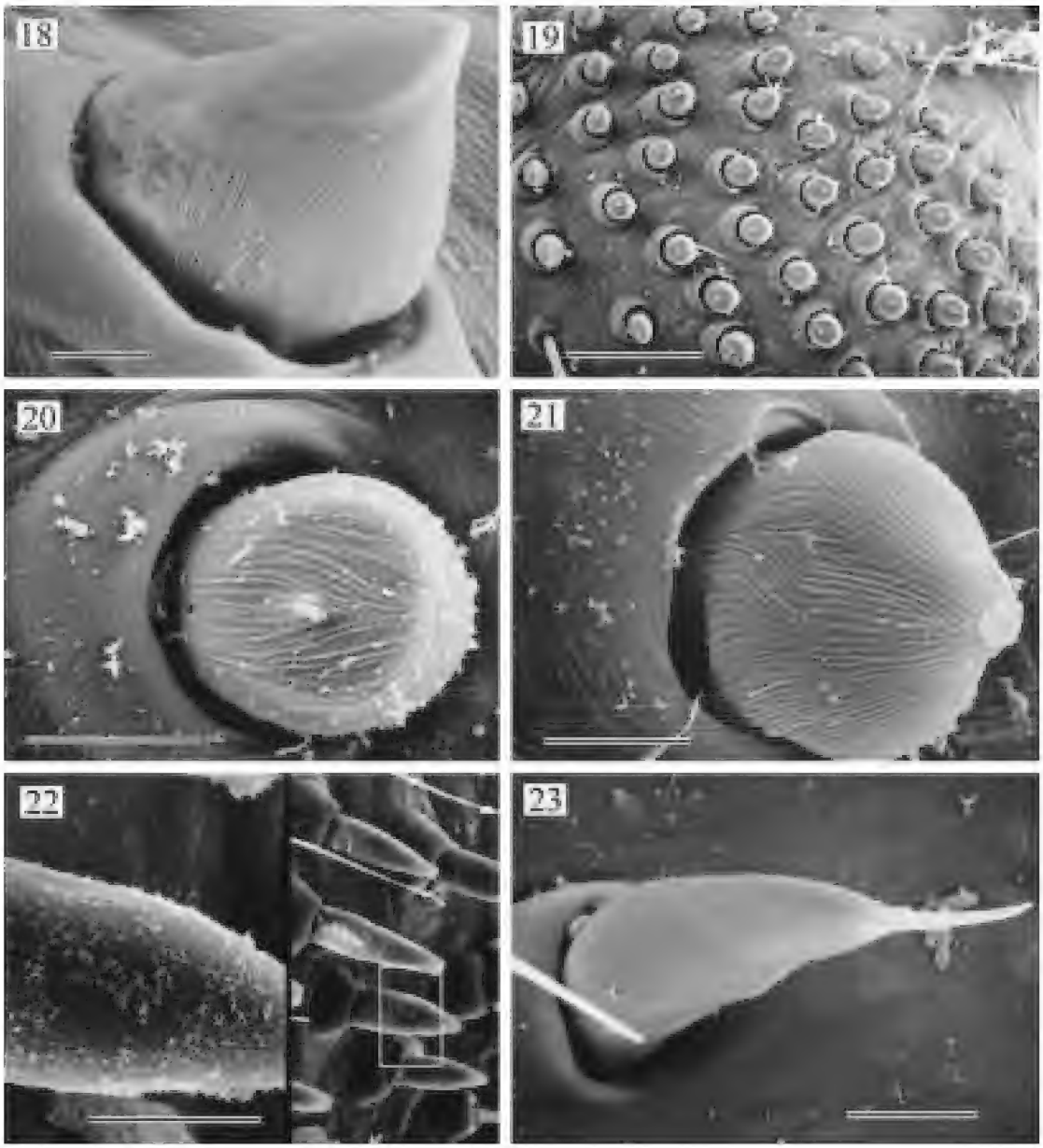
Character 4. Sculpture of ocular area: *(0) "flat"; (1) elevated medially, all eyes together on this elevation; (2) two elevations, with an eye triad on each elevation.* A "flat" ocular area (i.e., one that is not or barely raised above the carapace) is primitive. A median elevation evolved several times convergently, a pair of elevations apparently only in the *Pholcus* group.

Character 5. High eye turret: *(0) absent; (1) present.* This character is poorly defined (very high median elevation, all eyes close together; fig. 9), and is the only known synapomorphy of *Modisimus*.

Character 6. Sculpture of carapace: *(0) without median indentation; (1) with median*



Figs. 12–17. Sexual modifications on male chelicerae. **12–13**. *Artema atlanta* Walckenaer. **14**. *Holocnemus pluchei* (Scopoli), single modified hair on cheliceral apophysis. **15**. *Smeringopus pallidus* (Blackwall), single modified hair on cheliceral apophysis. **16**. *Pisaboa silvae*, n. gen., n. sp., apophysis surrounded by membrane (cf. fig. 1048). **17**. *Aucana platnicki*, n. gen., n. sp., cone-shaped apophyses and stridulatory ridges (cf. fig. 400). Scale lines: 50 μm (12, 17), 20 μm (13–16).



Figs. 18–23. Sexual modifications on male chelicerae: modified hairs. **18**. *Carapoia fowleri*, n. sp. **19–20**. *Carapoia ocaina*, n. sp. **21**. *Modisimus dominical* Huber. **22–23**. *Modisimus guatuso* Huber. Scale lines: 6 μm (18, 20, 22–23), 40 μm (19), 3 μm (21).

groove; (2) with a "pit," i.e., a roughly circular indentation behind ocular area. The pit is sometimes not easily distinguished from a mere widening of the thoracic groove. Only wide, circular indentations are here coded as pits, while the widened grooves of, for example, *Ixchela*, n. gen., and *Physocyclus mysticus* Chamberlin are coded as grooves. In the analysis using equally weighted characters, a carapace without median indentation is primitive; a median groove evolved several times convergently, but is most consistently found in the New World clade; the pits of the *Holocnemus* group and *Aymaria*,

n. gen., have apparently evolved independently from a median groove. In the analysis using successive weighting, the primitive condition is ambiguous.

Character 7. Male carapace posteriorly inflated (figs. 1024, 1060, 1069): *(0) no; (1) yes.* The inflated carapace is a synapomorphy of *Mecoloesthus* Simon.

Character 8. Clypeus height: *(0) shorter than chelicerae; (1) as long as or longer than chelicerae.* The high clypeus is a synapomorphy of Pholcidae.

Character 9. Male clypeus sexual modification: *(0) absent, or only in inclination; (1) present.* A sexually unmodified clypeus is primitive. In the present data set, clypeus modifications occur only in *Metagonia*, but they are actually more widespread. They also occur in *Litoporus* (fig. 1213), in *Kaliana* n. gen. (fig. 1095), in *Holocneminus* Berland (see Marples, 1955; Deeleman-Reinhold, 1995), *Spermophora* Hentz (see Berland, 1920; Fage and Simon, 1936), *Smeringopina* Kraus (see Kraus, 1957), *Modisimus culicinus* (Simon) (see Huber, 1997d: fig. 1, 1999: figs. 5–6), and *Leptopholcus* (see Simon, 1893b, fig. 464).

Character 10. Sternum shape: *(0) about as wide as long: width = 1–1.15 × length; (1) significantly wider than long: width > 1.15 × length; (2) longer than wide.* In the analysis using equally weighted characters, a narrow sternum [state (0)] is primitive. In the analysis using successive weighting, the primitive condition is ambiguous.

Character 11. Anterior humps on male sternum: *(0) absent; (1) present.* Such humps have apparently evolved several times convergently, both in ninetines and the New World clade (e.g., figs. 317, 1102). Their function is unknown.

Opisthosoma

Character 12. Epiandrous spigots in front of male gonopore: *(0) absent; (1) present.* In *Ninetis minuta*, the male gonopore was not studied. It is coded as present because spigots are present in the closely related *N. namibiae*, n. sp. (fig. 125). The presence of epiandrous spigots is considered primitive by the analyses using equally weighted characters and successive weighting (only the analysis using implied weights suggested the opposite; see Cladistic Analysis below). Epiandrous spigots have been reduced several times convergently: at least once in each of the following groups: ninetines, *Physocyclus* + *Priscula*, and the New World clade.

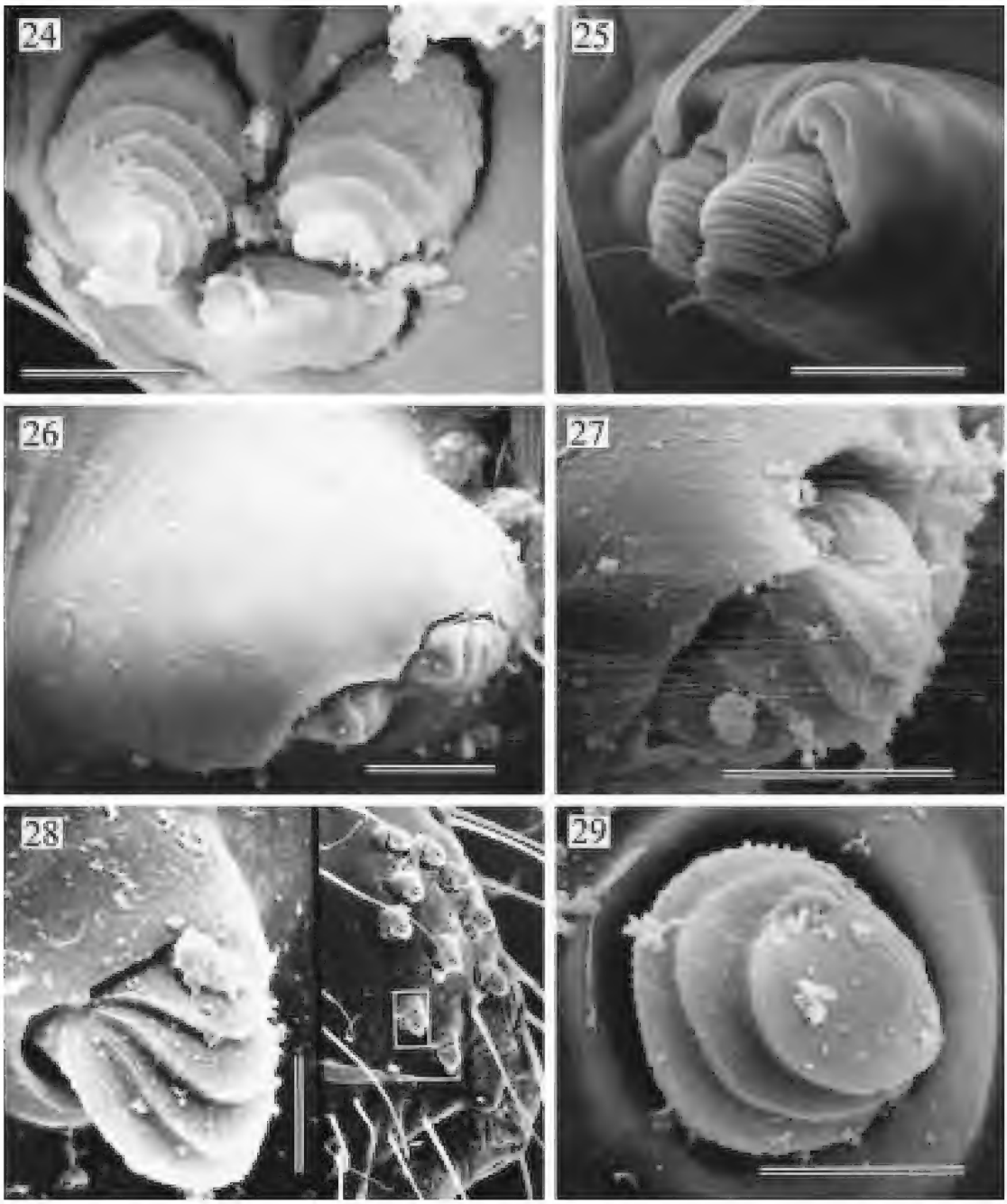
Character 13. Spigots on posterior lateral spinnerets (PLS): *(0) present; (1) absent. Diguetia* is coded as present because spigots are present in females (and sometimes also in males), and their presence is considered plesiomorphic (Platnick et al., 1991). The absence of PLS spigots is a synapomorphy of Pholcidae.

Character 14. Spigots on anterior lateral spinnerets (ALS): *(0) several piriform gland spigots present; (1) only one piriform gland spigot present. Diguetia* and *Plectreurys* are coded as "0" because the presence of several spigots seems to be the primitive condition in both families (Platnick et al., 1991). *Ninetis minuta* was not examined, but is coded as "0" because spigots are present in *N. namibiae*, n. sp. (fig. 152). The presence of several piriform gland spigots is considered primitive by the analyses using equally weighted characters and successive weighting. Only the analysis using implied weights suggested the opposite at conc (value of concavity constant) = 5 and 6; see Cladistic Analysis below. ALS piriform spigots have been reduced to one at least five times independently: in some *Metagonia* species, within *Calapnita* (they are present in *C. phyllicola* Deeleman-Reinhold, absent in *C. vermiformis* Simon; figs. 161, 177), in *Ibotyporanga*, in *Crossopriza* + *Holocnemus*, and in the entire New World clade.

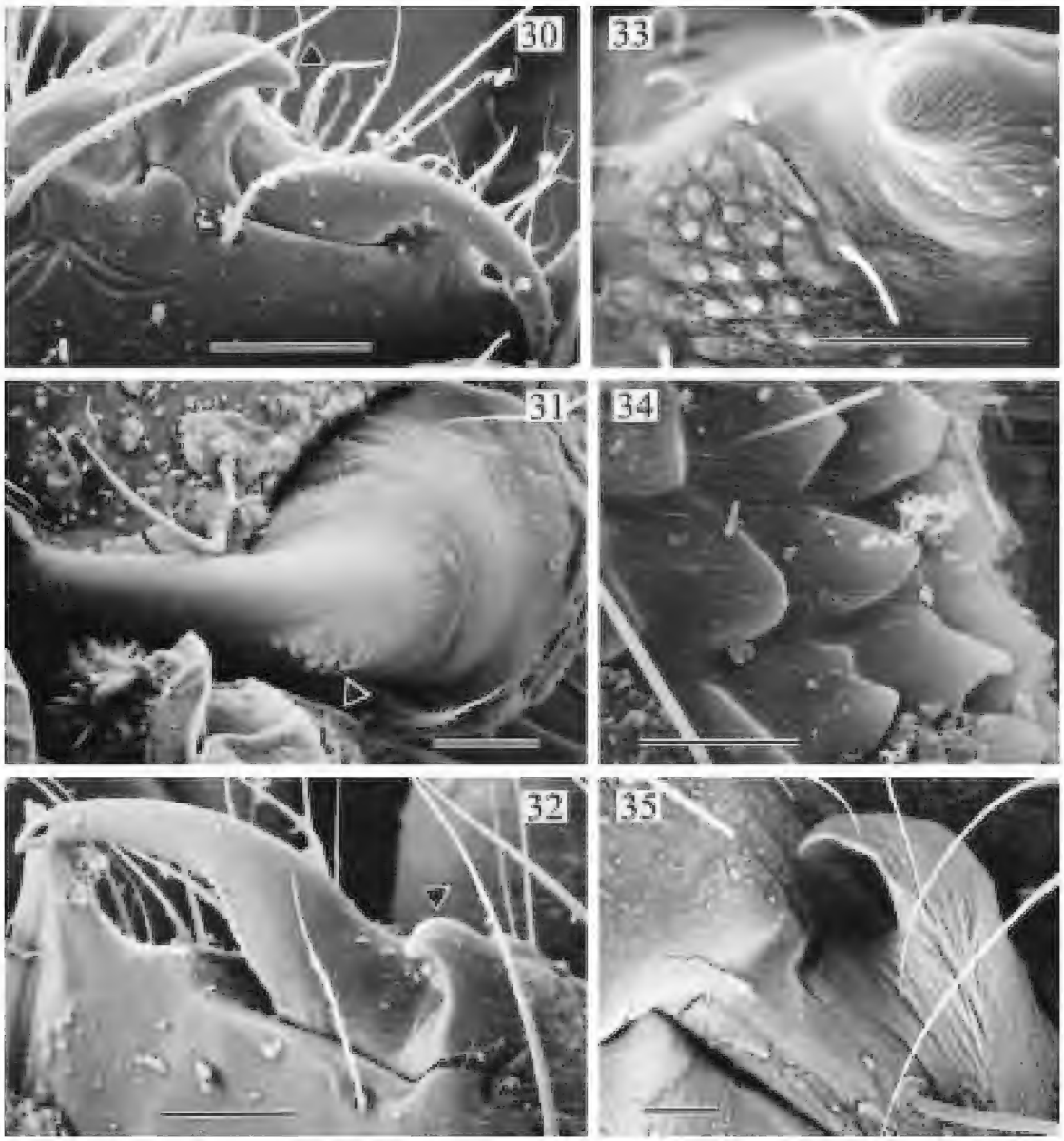
Character 15. Cribellum: *(0) present; (1) absent.* In the present data set, only *Kukulkania* has a cribellum.

Character 16. Pseudoentelegyny: *(0) absent; (1) present.* This refers to the situation found in many representatives of *Metagonia*, where a receptacle is provided with two ducts in a conduit morphology (Huber, 1997a). State (0) is primitive.

Character 17. Knob- or hook-shaped apophysis medially on epigynum: *(0) absent; (1) present.* This knob-shaped apophysis is here considered a synapomorphy of the *Pholcus* group, but may actually be a syna-



Figs. 24–29. Sexual modifications on male chelicerae: modified hairs. **24–25**. *Spermophora senoculata* (Dugès), modified hairs on distal cheliceral apophysis. **26**. *Micropholcus fauroti* (Simon), modified hairs on distal cheliceral apophysis. **27**. *Leptopholcus dalei* (Petrunkevitch), modified hair on cheliceral apophysis. **28**. *Metagonia rica* Gertsch, hairs on frontal surface. **29**. *Metagonia delicata* (O. Pickard-Cambridge), one of the several hairs on frontal surface. Scale lines: 4 μm (24, 27–29), 10 μm (25–26).



Figs. 30–35. Sexual modifications on male chelicerae. **30**. *Galapa baerti* (Gertsch), cheliceral fang with basal apophysis (arrow). **31**. *Chibchea araona*, n. gen., n. sp., cheliceral fang with tiny projections (arrow; cf. fig. 666). **32**. *Blancoa piacoa*, n. gen., n. sp., cheliceral fang with basal apophysis (arrow). **33**. *Canaima arima* (Gertsch), cheliceral apophysis and projections. **34**. *Calapnita vermiformis* Simon, scales on distal cheliceral apophysis. **35**. *Coryssocnemis simla*, n. sp., upward-bent apophysis. Scale lines: 20 μm (30–33, 35), 3 μm (34).

pomorphy of only a subset of genera within the *Pholcus* group.

Character 18. Median groove or pocket on epigynum: *(0) absent; (1) present.* A median groove or pocket characterizes the genus *Mesabolivar* González-Sponga, but median pockets have rarely evolved in other genera too (e.g., *Metagonia*: fig. 242; *Litoporus*: fig. 1210).

Character 19. Epigynum scape (without

pocket): *(0) absent; (1) present.* This refers only to the unique scape of *Otavaloa*, n. gen. (figs. 1240, 1248, 1251), not to the pocket-bearing scapes of other genera (e.g., *Mesabolivar*: figs. 799, 838; *Litoporus*: fig. 1210). The absence of any scape is primitive.

Character 20. Asymmetry of female internal genitalia: *(0) absent; (1) present.* Symmetrical female internal genitalia are primitive. Asymmetrical genitalia are synapomorphic for *Metagonia* (or rather for a monophyletic subgenus within *Metagonia*; see Specific Relationships under *Metagonia* description, p. 54).

LEGS

Character 21. Trochanter cuneal notch: *(0) absent; (1) present.* Contrary to Roth (1964), I found the trochanter notch in *Plectreurys tristis* to be identical to the "typical pholcid notch." That of *Diguetia* differs only slightly. Thus, the notch is here considered a synapomorphy of (Diguetidae + Plectreuridae) + Pholcidae.

Character 22. Relative length of male femur 1 and tibia 1: *(0) about same length; (1) femur 1 > 1.15 × tibia 1.* State (0) is primitive even though the sister group of Pholcidae has state (1). Within Pholcidae, a high ratio of femur 1/tibia 1 may be a synapomorphy of *Litoporus.* This is not supported by the analysis using successive weighting.

Character 23. Enlarged femora of walking legs: *(0) absent; (1) present.* In the present data set, the presence of enlarged femora unites *Mesabolivar* and *Coryssocnemis* Simon, but the character shows significant homoplasy (also present in some species of the genera *Psilochorus* Simon; *Aymaria*, n. gen.; *Chibchea*, n. gen.; and *Carapoia* González-Sponga). State (0) is primitive.

Character 24. Spines (macrotrichia) on male femora: *(0) absent; (1) present.* The absence of femoral spines is primitive. In the present data set, femoral spines have evolved independently in *Crossopriza* + *Holocnemus*, in *Modisimus*, and in *Coryssocnemis.* Apart from that, femoral spines have also evolved in *Tainonia*, n. gen. (here they occur in both males and females), and *Mesabolivar* (some species).

Character 25. Vertical hairs on male femora: *(0) absent or few; (1) many.* State (0) is primitive. Vertical hairs on male femora have evolved several times independently: in *Mesabolivar* (*cyaneotaeniatus*), in *Modisimus*, and *Waunana*, n. gen. Their function is unknown.

Character 26. Vertical hairs on male tibiae: *(0) absent or few; (1) many.* State (0) is primitive. Vertical hairs on male tibiae occur in ninetines (*Ibotyporanga*) and in the New World clade (several genera; apparently evolved at least twice).

Character 27. Relative length of male tibiae 1 and 4: *(0) about same length; (1) tibia 1 > 1.15 × tibia 4.* The primitive condition is ambiguous: in one of the preferred topologies, state (1) is primitive although the sister group of Pholcidae has state (0). In the other topology, state (1) is either primitive, or unites all pholcids except ninetines.

Character 28. Number of trichobothria on tibiae: *(0) more than three; (1) three (rarely two).* Three trichobothria on the tibiae is a synapomorphy of Pholcidae.

Character 29. Spines (macrotrichia) on male metatarsi: *(0) absent; (1) present.* State (0) is primitive. Metatarsal spines (figs. 791, 889–890, 910) are probably a synapomorphy of a subgenus within *Mesabolivar.*

Character 30. Curved hairs on legs: *(0) absent; (1) present.* State (0) is primitive. Curved hairs (cf. fig. 33 in Huber, 1998c) have probably evolved several times convergently within holocnemines and the New World clade. They have also been described in *Holocneminus* (Marples, 1955).

Character 31. Position of retrolateral trichobothrium on male tibia 1: *(0) distal: after 45% of tibia length; (1) proximal: before 45% of tibia length.* The primitive condition is ambiguous: in one of the preferred topologies, state (1) is primitive; in the other topology, both options are open. Very distal retrolateral trichobothria occur independently in ninetines and in certain *Anopsicus* species. This character may directly depend on absolute leg length (char. 32), for example, if it is the absolute distance between the trichobothria that matters rather than their position on the tibia.

Character 32. Leg length: *(0) short-legged: male tibia 1 up to 2.5 × carapace*

width; (1) long-legged: male tibia 1 > 2.5 × carapace width. The primitive condition is ambiguous: in one of the preferred topologies, state (1) is primitive, and short legs (state 0) are a synapomorphy of ninetines; in the other topology, the ancestral pholcid is either short- or long-legged, depending on the optimization. The "typical" short-legged pholcids are the ninetines, but short-legged species are common in *Anopsicus*, and occur also in *Metagonia* and *Chibchea*. Leg length possibly affects several characters that may be directly or indirectly correlated with it (char. 27, 31, 34).

Character 33. Tarsus pseudosegments: *(0) absent; (1) present.* The presence of pseudosegmented tarsi is a synapomorphy of Pholcidae.

Character 34. Number of tarsus pseudosegments: *(0) up to 10; (1) more than 10.* The primitive condition is ambiguous: in one of the preferred topologies, state (1) is primitive; in the other topology, both options are open. A low number of pseudosegments is characteristic for ninetines (usually not more than 5–6), and rare in other pholcids (e.g., *Metagonia globulosa*, n. sp.). This character is probably directly correlated with leg length (char. 32).

Character 35. Borders between pseudosegments: *(0) distinct, regular; (1) indistinct, with seemingly irregularly "broken" cuticle.* Borders of "indistinct" pseudosegments are often not visible in the light microscope, but only in SEM. The tarsus of *Holocnemus pluchei* (Scopoli) was not studied by SEM, but is coded as "1" because the pseudosegments are indistinct in *H. hispanicus* Wiehle (fig. 97). The primitive condition (distinct pseudosegments) was defined a priori by making it a criterion for tree selection (see Cladistic Analysis below), and the broken pseudosegments are apparently a synapomorphy of holocnemines.

Chelicerae

Character 36. Sexual dimorphism of chelicerae: *(0) absent; (1) present.* While it is not probable that all the sexual modifications on pholcid male chelicerae are homologous (e.g., apophyses and modified hairs), the underlying reason for a multiple convergent evolution of such a sexual dimorphism may be a synapomorphy of pholcids. The underlying reason is probably the mating position, which brings the male chelicerae in contact with the female (see Huber, 1994, 1995, 1998a; Huber and Eberhard, 1997). Thus, even though cheliceral modifications are ubiquitous in pholcids, absence of such modifications is probably the primitive condition. Secondary absence is very rare, occurring in *Tupigea nadleri*, n. gen., n. sp.; "*Coryssocnemis*" *viridescens* Kraus; and *Psilochorus acanthus* Chamberlin and Ivie.

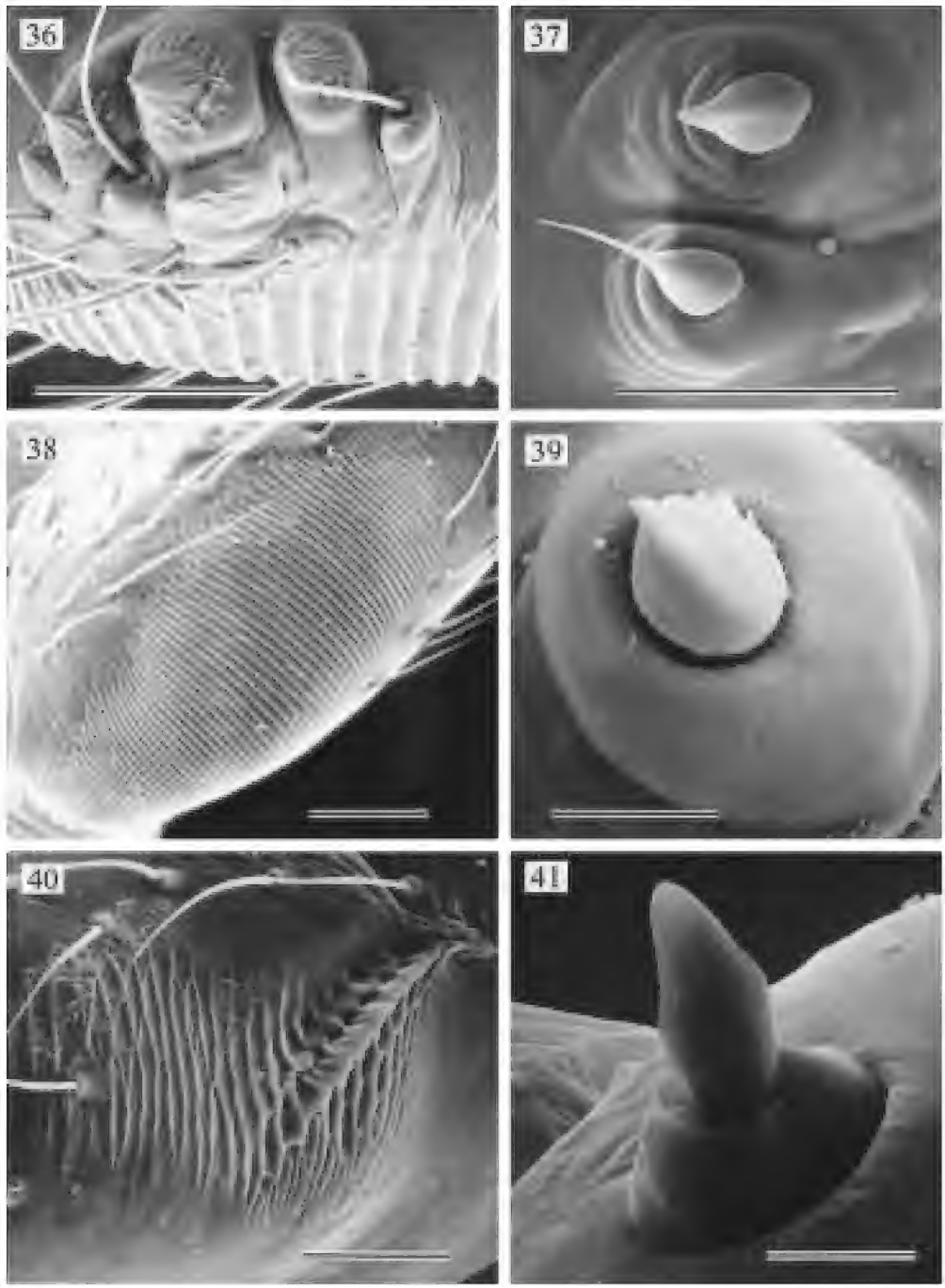
Character 37. Stridulatory files laterally on male chelicerae: *(0) absent; (1) present.* Absence of cheliceral stridulation is primitive. See Huber (1995) for a list of pholcid taxa with this type of stridulation. The following can be added (apart from those contained in the matrix): *Metagonia asintal* Huber; *M. furcata*, n. sp.; several ninetines described below; and *Serratochorus pygmaeus* Wunderlich. It is surprising that while this type of stridulation has apparently evolved several times convergently, it is completely absent in the New World clade and in the *Pholcus* group, and very rare in *Metagonia*.

Character 38. Shape of cheliceral lamina: *(0) not pointed; (1) pointed.* State (0) is primitive. This character is difficult to define precisely, but in holocnemines the lamina is significantly more pointed than in most pholcids (compare, for example, figs. 523, 578 with 601, 620). A rather pointed lamina occurs also in *Ibotyporanga*.

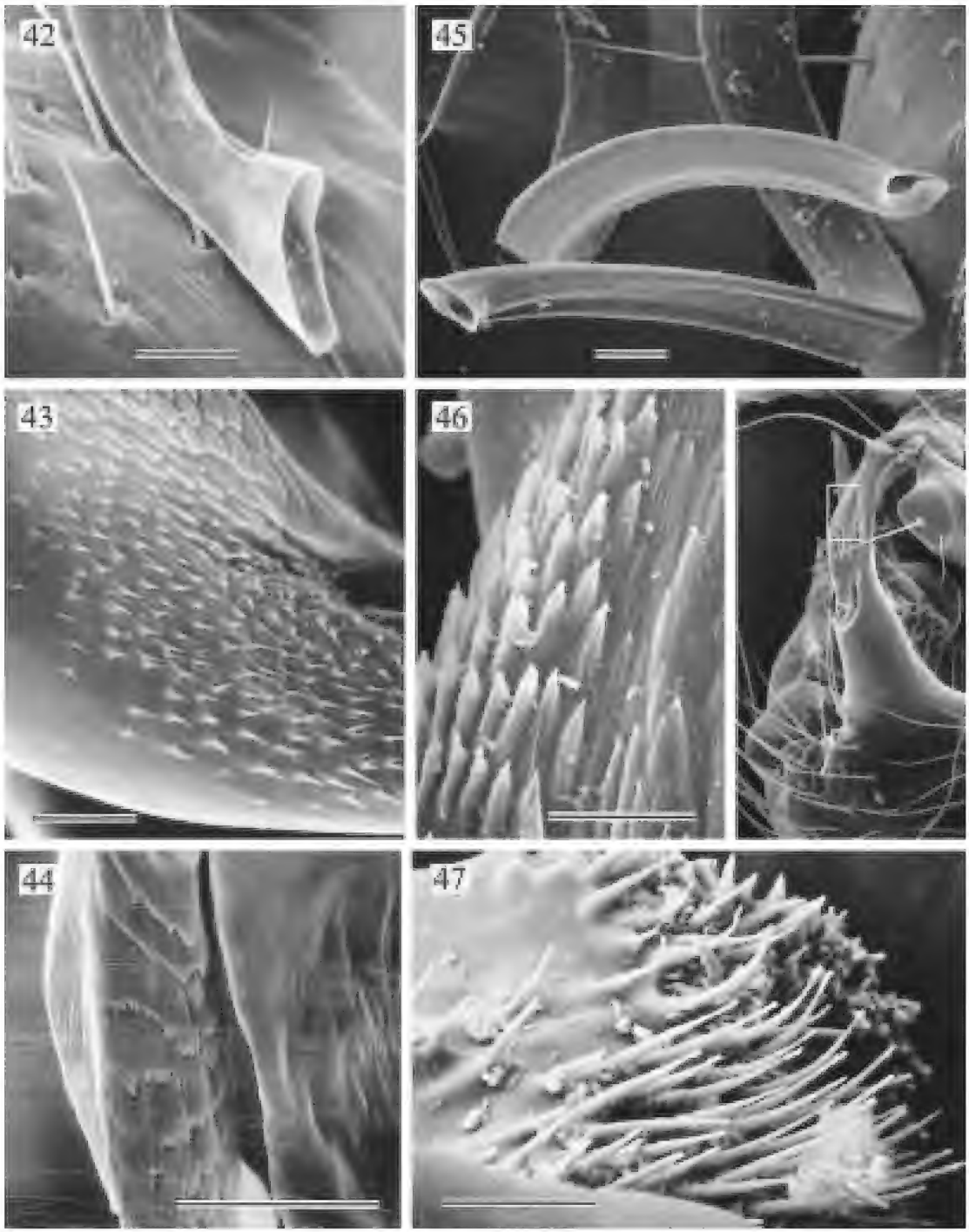
Character 39. Sexual modifications on male cheliceral fangs: *(0) absent; (1) present.* Unmodified fangs are primitive. Modifications have probably evolved three times independently: once in ninetines (*Galapa*, n. gen.) and twice in the New World clade (*Blancoa piacoa*, n. gen., n. sp.; and *Chibchea*, n. gen.).

Character 40. Proximolateral apophyses on male chelicerae: *(0) absent; (1) present.* This is the original character defining the *Pholcus* group sensu Huber (1995). Similar structures occur in *Mesabolivar eberhardi*, n. sp. (fig. 774); and *Kaliana yuruani*, n. gen., n. sp. (fig. 1092).

Character 41. Sclerotized cones on male chelicerae: *(0) absent, or only 1–2 pairs; (1)*



Figs. 36–41. Stridulatory files on male chelicerae and corresponding picks on palpal femora. **36**. *Physocyclus globosus* (Taczanowski). **37**. *Physocyclus guanacaste* Huber. **38–39**. *Ibotyporanga naideae* Mello-Leitão. **40–41**. *Metagonia asintal* Huber. Scale lines: 60 μm (36, 38), 30 μm (37, 40), 6 μm (39, 41).



Figs. 42–47. Ultrastructure of the procursus. **42**. *Mesabolivar aurantiacus* (Mello-Leitão), procursus tip. **43**. *Mesabolivar aurantiacus* (Mello-Leitão), procursus at basis of distal apophysis, retrolateral. **44**. *Aucana platnicki*, n. gen., n. sp., dorsal flap of procursus, prolateral. **45**. *Metagonia delicata* (O. Pickard-Cambridge), procursus tips. **46**. *Modisimus dominical* Huber, retrolateral. **47**. *Micropholcus fauroti* (Simon), tip of main branch of procursus. Scale lines: 20 μm.

several. Absence of cones is primitive. This character is more common than suggested by the present data set. It occurs (in addition to *Physocyclus* and *Coryssocnemis*) also in *Tupigea sicki*, n. gen., n. sp., and "*Anopsicus*" *banksi* (Gertsch).

Character 42. Pectinate apophyses on male chelicerae (cf. fig. 1232): *(0) absent; (1) present.* This refers to the unique cheliceral apophyses in *Otavaloa*, n. gen.; the unique epigynal scape in this genus (char. 19) is probably directly functionally related (i.e., grasped by the male cheliceral apophyses during copulation).

Character 43. Upward-facing apophyses on male chelicerae (figs. 35, 987, 997): *(0) absent; (1) present.* These unique apophyses are a synapomorphy of *Coryssocnemis*.

Character 44. Globular or conical hairs on male chelicerae: *(0) absent; (1) present.* In the analysis using equally weighted characters, state (0) is primitive. Such modified hairs may have evolved at least four times: at least once in *Metagonia* + *Pholcus* group, at least once in *Artema* + *Holocnemus* group, once in *Carapoia*, and once in *Modisimus* (*M. dominical* Huber). Similar hairs, though rather club-shaped, have evolved also in *Systenita* Simon, *Blancoa*, n. gen. (*B. guacharo*, n. sp.), and *Tupigea*, n. gen. (*T. maza*, n. sp.). In the analysis using successive weighting, the primitive condition is ambiguous.

Character 45. Deep regular grooves on cheliceral globular hairs (figs. 14–15, 24–29): *(0) absent; (1) present.* Globular hairs with and without deep grooves have apparently evolved independently, and none is, generally speaking, ancestral to the other. In holocnemines, however, the absence of grooves in *Artema* may be ancestral to the presence of grooves in the *Holocnemus* group. Comparison of the details in *Metagonia* and the *Pholcus* group on one hand, and the *Holocnemus* group on the other hand (figs. 14–15, 24–29), shows that the grooves in both groups are actually not that similar.

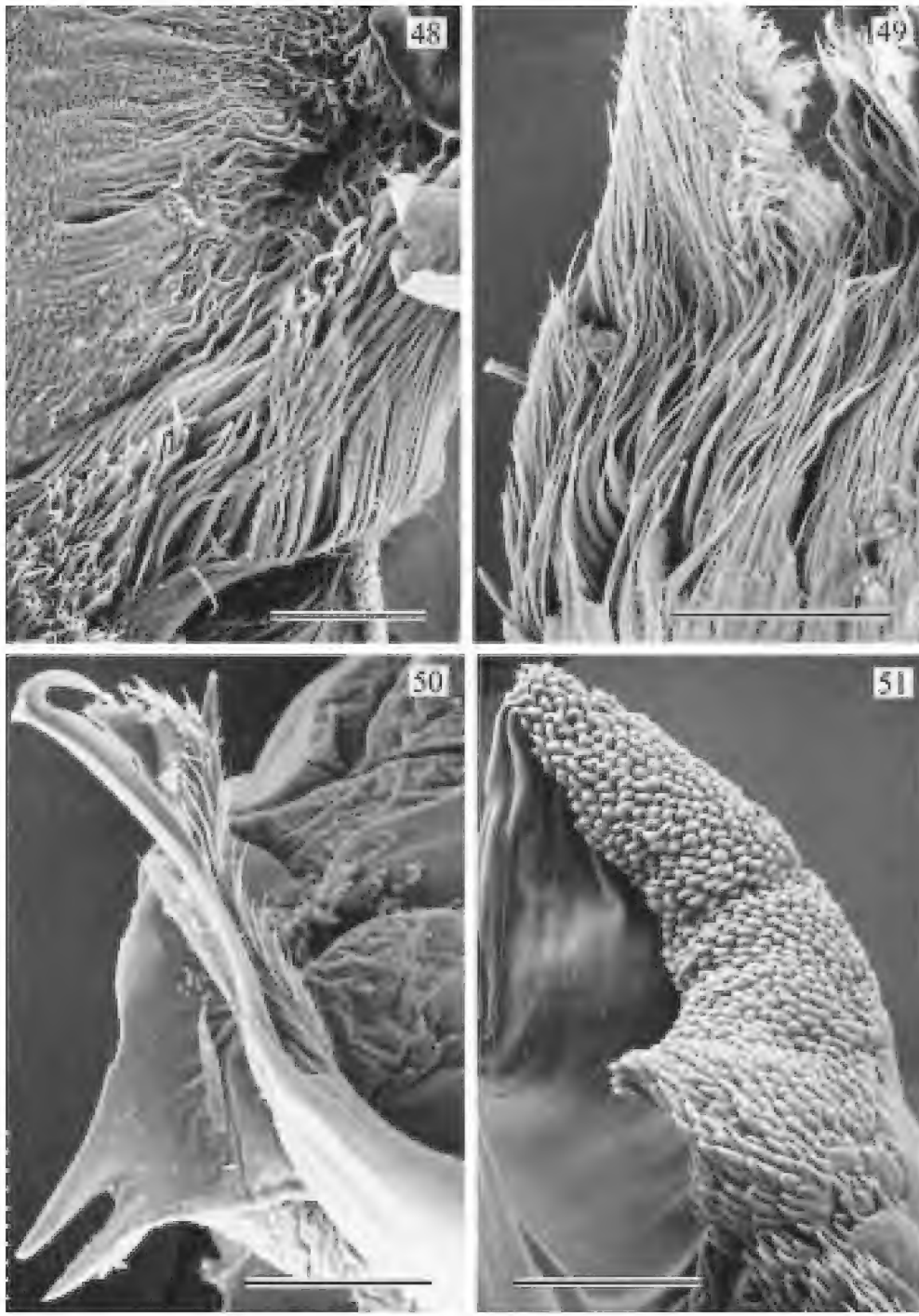
Character 46. One or more modified hairs imbedded in tip of cheliceral apophysis: *(0) absent; (1) present.* State (0) is primitive. Such cheliceral apophyses equipped with special hairs have apparently evolved independently in the *Pholcus* group and the *Holocnemus* group. A slightly similar situation occurs in the genus *Systenita* (New World clade).

Palps

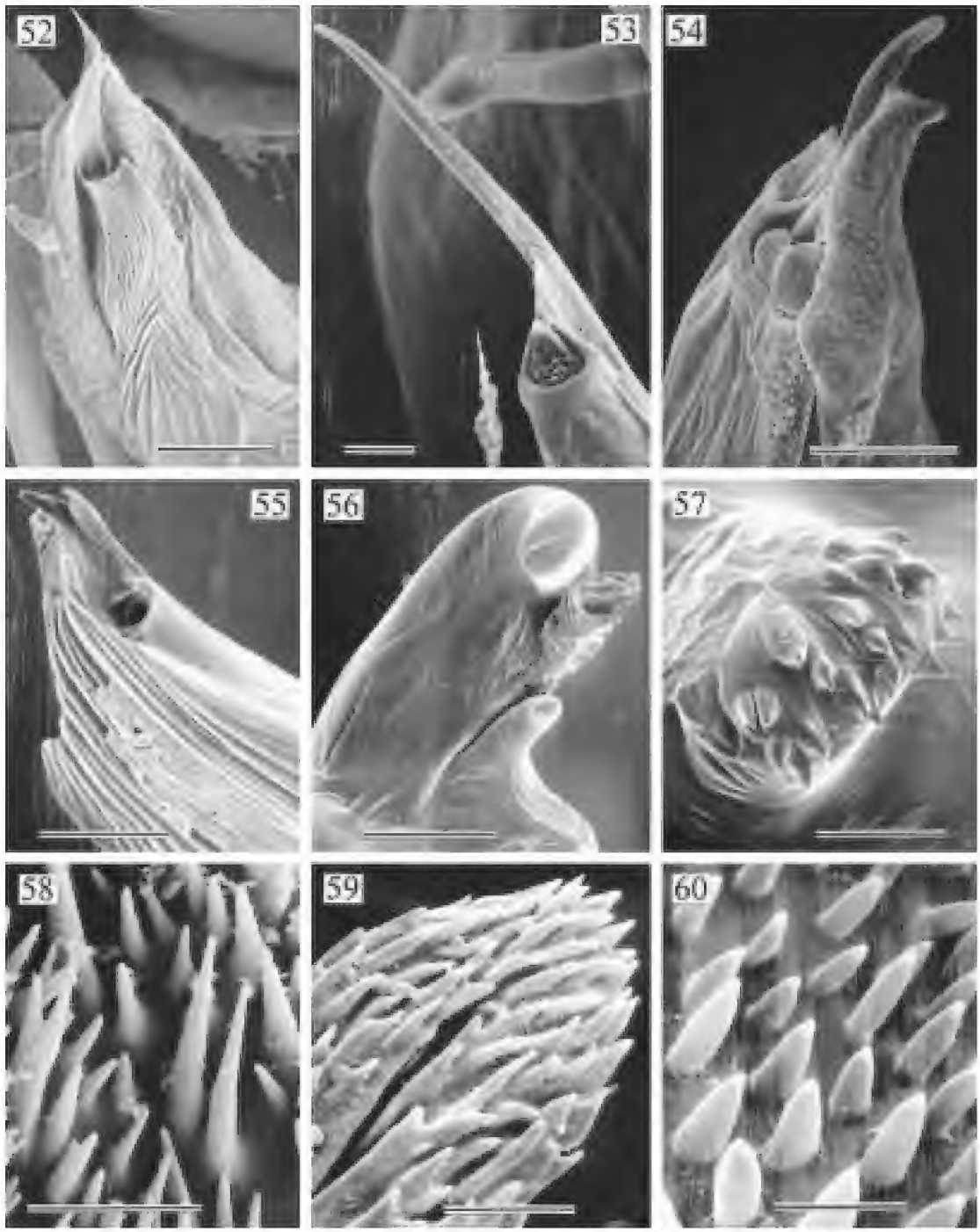
Character 47. Retrolateral apophysis on male palpal coxa: *(0) absent; (1) present.* This apophysis is a synapomorphy of the New World clade, has apparently evolved only once, and is secondarily absent in a few species of the genera *Anopsicus*, *Blancoa*, *Litoporus*, *Tupigea*. It is worth noting that the functionally important structure is probably not the apophysis per se, but the groove that is formed between the coxa and the apophysis. It seems to stabilize the rotated palp during copulation: Huber, 1994, 1998a.

Character 48. Fingerlike apophysis ventrally on male palpal trochanter: *(0) absent; (1) present.* Such an apophysis has evolved only once within the genus *Chibchea*, n. gen. (see Species Relationships under description of *Chibchea*, p. 164).

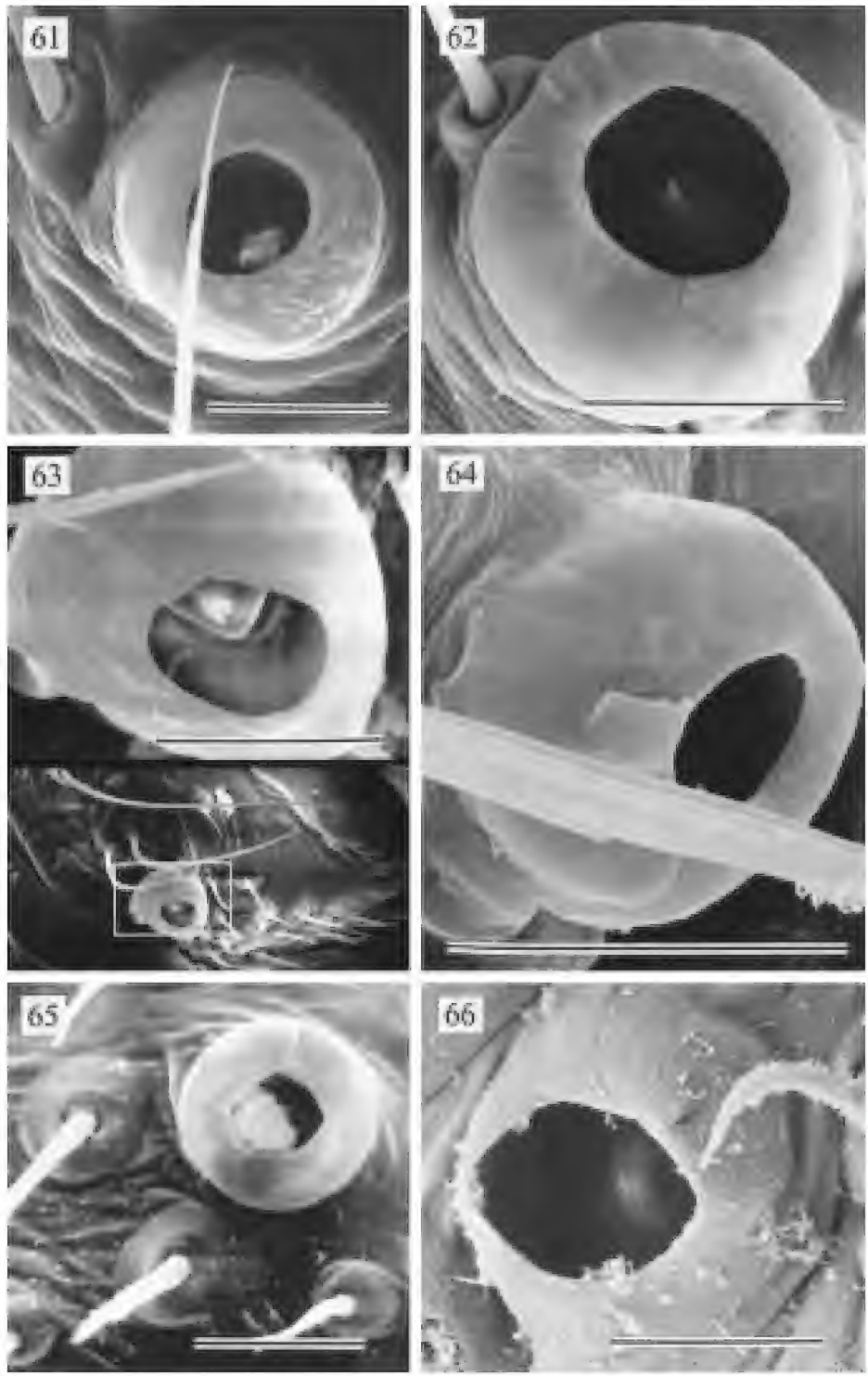
Character 49. Pointed and upward projecting ("pup") apophysis ventrally on male palpal femur: *(0) absent; (1) present.* The absence of such an apophysis is primitive. The structure is very common in the New World clade, very rare in the Old World [e.g., *Pholcus kapuri* Tikader (Tikader, 1977: figs. 3e–f); *Panjange sedgwicki* Deeleman-Reinhold and Platnick (Deeleman-Reinhold and Platnick, 1986: figs. 3, 4)]. A previous study (Huber, 1998a) proposed the monophyly of a group defined by the presence of this character ("*Modisimus* group"), but the cladistic analysis is ambiguous in this respect, at least as far as the scope of the *Modisimus* group is concerned: the cladogram in appendix 2 (equally weighted characters) supports the monophyly of the *Modisimus* group almost exactly as originally defined (*Modisimus*, *Anopsicus*, *Psilochorus*, plus some taxa not included in the cladistic analysis), but does not include the South American genera with "pup" apophysis (*Waunana*, n. gen.; *Tupigea*, n. gen.; *Pisaboa*, n. gen.; and *Stenosfemuraia* González-Sponga, which is not included in the matrix). Using successive weighting, however, changed the scope to also include the South American genera except *Tupigea*. The presence of a "pup"



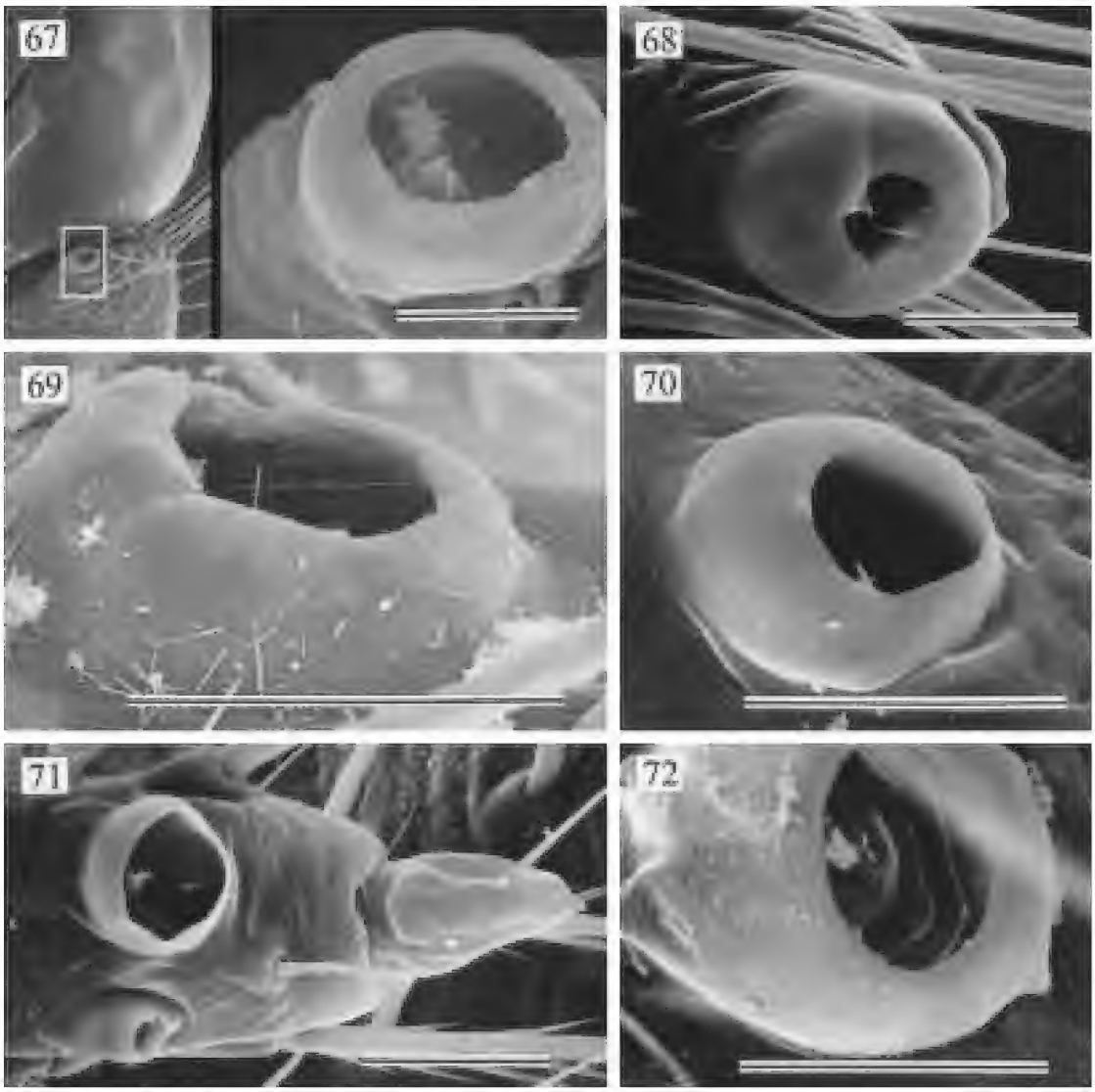
Figs. 48–51. Ultrastructure of the procursus. **48**. *Artema atlanta* Walckenaer, brush distally on procursus. **49**. *Physocyclus globosus* (Taczanowski), brush distally on procursus. **50**. *Tupigea lisei*, n. gen., n. sp., procursus tip with pseudotrichia (and apophyses on the bulb at the lower left). **51**. *Priscula* sp. from Peru (Cajamarca: Cutervo; in CCR), brush distally on procursus. Scale lines: 50 μm.



Figs. 52–60. Ultrastructure of the genital bulb. **52**. *Pisaboa silvae*, n. gen., n. sp., tip of embolar division. **53**. *Metagonia globulosa*, n. sp., tip of embolus with distal spine. **54**. *Psilochorus pullulus* (Hentz), tip of embolar division. **55**. *Mesabolivar cyaneotaeniatus* (Keyserling), tip of embolar division. **56**. *Artema atlanta* Walckenaer, bulbal apophyses with membranous embolus. **57**. *Artema atlanta* Walckenaer, bulbal apophysis set with teeth. **58**. *Pisaboa silvae*, n. gen., n. sp., pseudotrichia on embolar division. **59**. *Mesabolivar huanuco*, n. sp., tip of embolar division. **60**. *Ibotyporanga naideae* Mello-Leitão, pseudotrichia on retrolateral side of bulb (cf. fig. 360). Scale lines: 150 μm (57), 60 μm (52, 54–56), 15 μm (53, 59–60), 5 μm (58).



Figs. 61–66. Tarsal organs in *Metagonia* (all on male pedipalp). **61**. *M. blanda* Gertsch. **62**. *M. maldonado*, n. sp. **63**. *M. delicata* (O. Pickard-Cambridge). **64**. *M. tinaja* Gertsch. **65**. *M. globulosa*, n. sp. **66**. *M. argentinensis* Mello-Leitão. Scale lines: 15 μm.

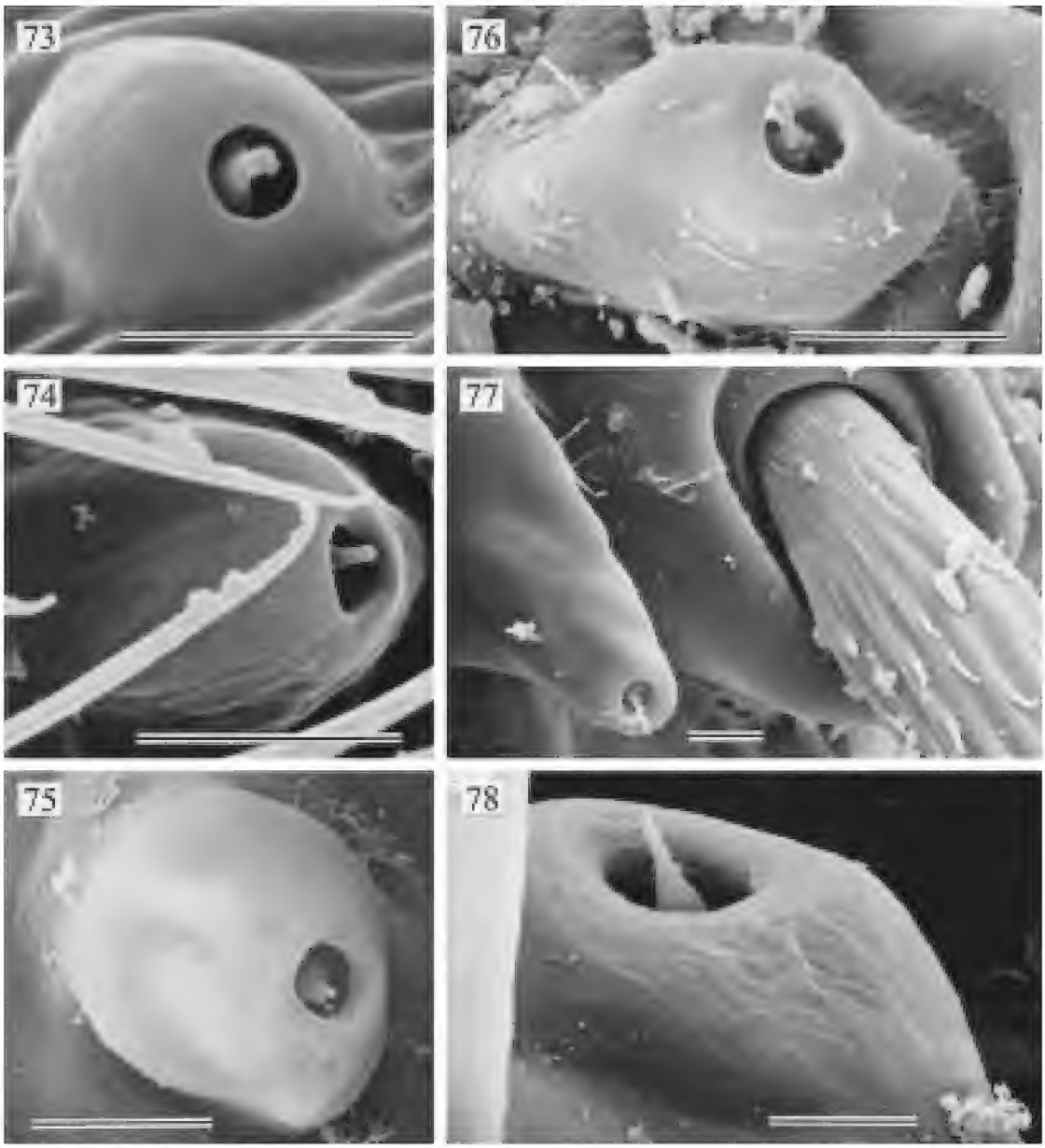


Figs. 67–72. Tarsal organs in some Old World genera (all on pedipalps). **67**. Unidentified genus and species (*Pholcus* group) from Sumatra, male. **68**. *Uthina* sp. from Sumatra, male. **69**. *Calapnita vermiformis* Simon, male. **70**. *Spermophora senoculata* (Dugès), male. **71**. *Spermophora senoculata* (Dugès), female. **72**. *Smeringopus pallidus* (Blackwall), male. Scale lines: 20 μm.

apophysis in some species tentatively assigned to *Mecoloesthus* (see Specific Relationships in genus description, p. 255) may either mean that the structure evolved there independently, or that the species are misplaced.

Character 50. Male palpal patella shape: *ventrally shorter than diameter; (1) ventrally as long as or longer than diameter (figs. 1266, 1300, 1304).* A ventrally short patella is primitive. A long patella characterizes *Tupigea*, n. gen., but has independently evolved in *Ibotyporanga*, *Gertschiola*, *Papiamenta*, n. gen., and in *Panjange* (see Deeleman-Reinhold, 1986b: fig. 53).

Character 51. Male palpal tibia "spindle-shaped": *(0) no; (1) yes.* This refers to the characteristic shape of the palpal tibia in males of the *Pholcus* group (i.e., narrowing distally). A similar form has evolved inde-

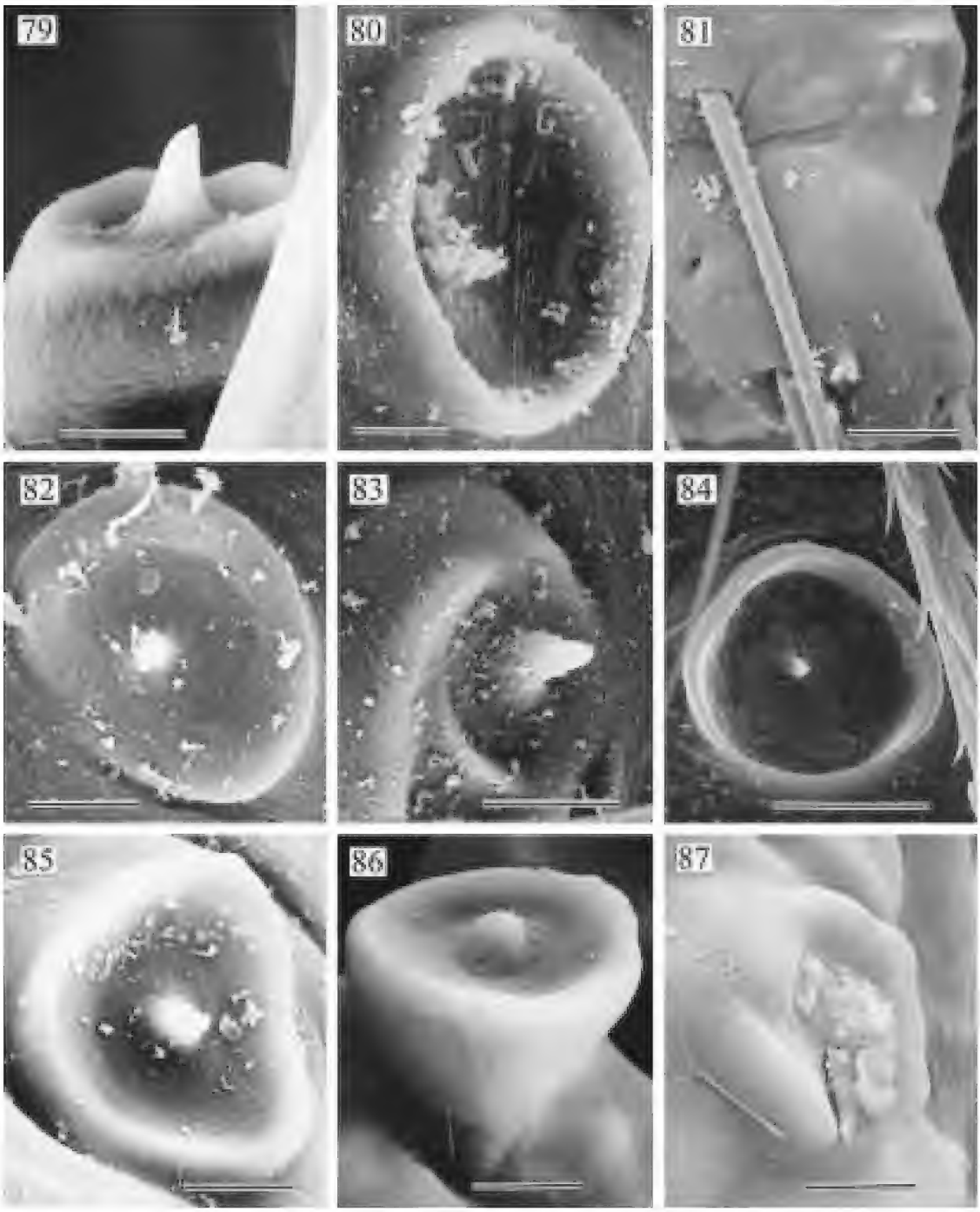


Figs. 73–78. Tarsal organs in ninetines: **73**. *Ninetis minuta* (Berland), male leg 3. **74**. *Ninetis minuta* (Berland), male leg 1. **75**. *Tolteca hesperia* (Gertsch), male palp. **76**. *Galapa baerti* (Gertsch), female palp. **77**. *Galapa baerti* (Gertsch), male palp. **78**. *Ibotyporanga naideae* Mello-Leitão, male palp. Scale lines: 3 μm.

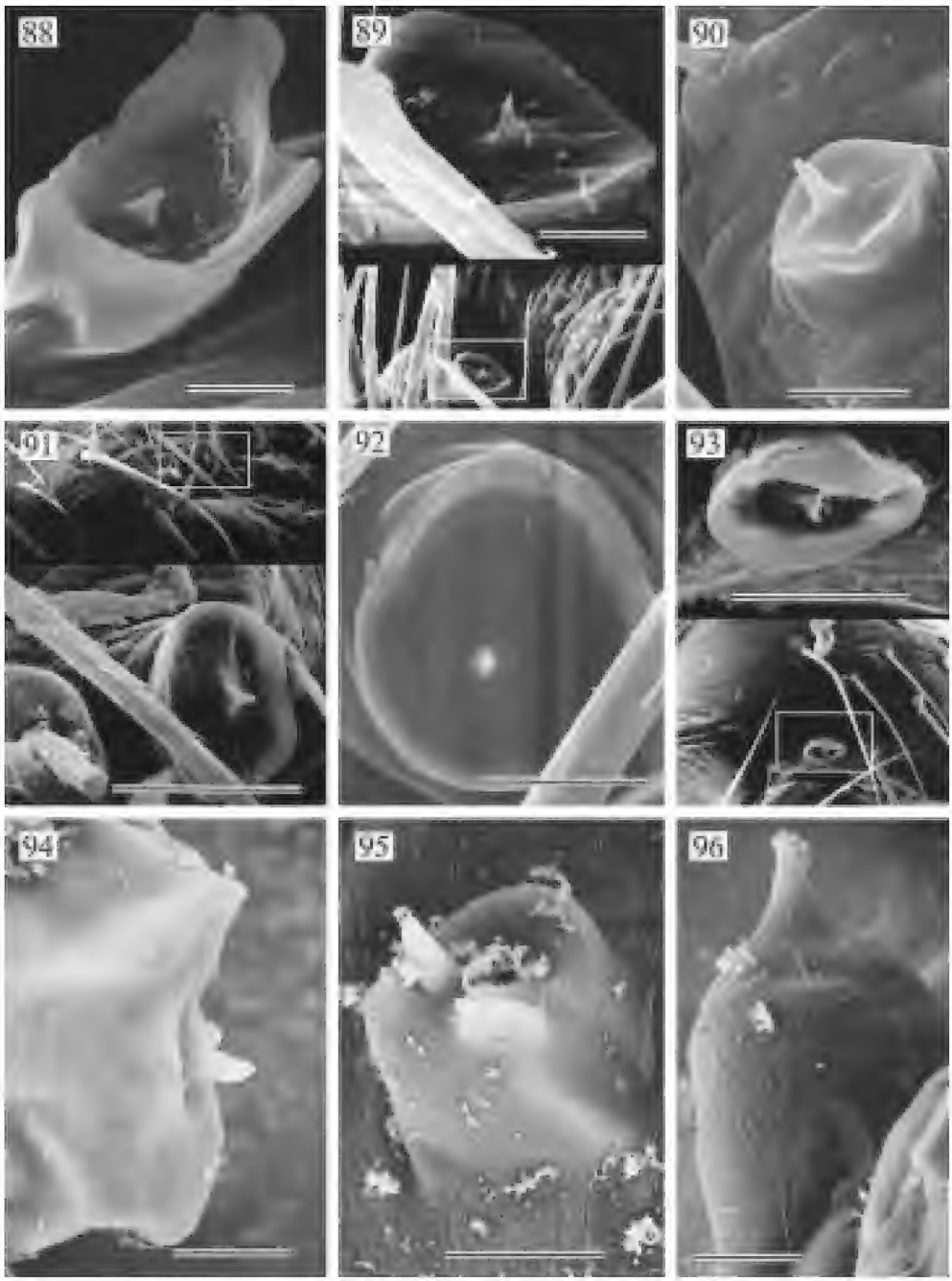
pendently in *Priscula* + *Physocyclus* (e.g., fig. 506). A more broadly ending, cylindrical tibia is primitive.

Character 52. Retrolateral paracymbium ("procursus") on male palpal cymbium: *(0) absent; (1) present.* The procursus is a synapomorphy of Pholcidae. It is always present, though rarely reduced to an inconspicuous lobe (e.g., in *Papiamenta*, n. gen.).

Character 53. Ventrally attached "hinged process" on procursus: *(0) absent; (1) present.* This character seems to be



Figs. 79–87. "Flat" (exposed) tarsal organs (all on pedipalps). **79**. *Mecoloesthus longissimus* Simon, male. **80**. *Chibchea picunche*, n. gen., n. sp., female. **81**. *Mesabolivar aurantiacus* (Mello-Leitão), male. **82**. *Tupigea nadleri*, n. gen., n. sp., female. **83**. *Tupigea lisei*, n. gen., n. sp., female. **84**. "*Psilochorus*" sp. from Australia: Magnetic Island, female. **85–86**. *Aucana platnicki*, n. gen., n. sp., female (85), male (86). **87**. *Aucana kaala*, n. gen., n. sp., male. Scale lines: 12 μm (81, 84), 3 μm (79–80, 82–83, 85–87).



Figs. 88–96. "Flat" (exposed) tarsal organs (all on pedipalps). **88**. *Psilochorus pullulus* (Hentz), male. **89**. *Modisimus culicinus* (Simon), male. **90**. *Anopsicus zeteki* (Gertsch), female. **91**. *Modisimus guatuso* Huber, male. **92**. *Ixchela furcula* (F. O. Pickard-Cambridge), female. **93**. *"Coryssocnemis" viridescens* Kraus, male. **94**. *Aymaria conica* (Banks), male. **95**. *Pisaboa silvae*, n. gen., n. sp., male. **96**. *Priscula ulai* González-Sponga, male. Scale lines: 20 μm (91–93), 6 μm (88–90, 94–96).

unique to *Metagonia* (more precisely, to a probably monophyletic subgenus of *Metagonia*), but a very similar structure occurs in *Micromerys*. Hinged processes also occur elsewhere (e.g., *Micropholcus*), but there they are attached dorsally.

Character 54. Ventral pocket and dorsal apophysis on procursus: *(0) absent; (1) present.* State (0) is primitive. While it is easy to recognize these structures in *Physocyclus* species, *Artema* seems to have them, but is only tentatively coded as present. Behavioral observations should easily solve this problem (asymmetrical insertion would be strong evidence in favor of a mechanism homologous to that described in *Physocyclus* by Huber and Eberhard, 1997).

Character 55. "Brush" of pseudotrichia distally on procursus: *(0) absent; (1) present.* Many pholcids have filiform cuticular projections on the procursus (e.g., figs. 47, 50), but only *Artema*, *Physocyclus*, and *Priscula* have brushes of hundreds of pseudotrichia (figs. 48–49, 508, 516, 525). It is tempting to use this character to place *Artema* closer to *Physocyclus* + *Priscula* than to the *Holocnemus* group, especially since the evidence that supports the second placement is not particularly compelling. Further observations mentioned under character 54 might provide a more convincing solution. In the cladogram in appendix 2, this character can be optimized in three different ways: 1. It could unite holocnemines, with two reversals. 2. It could unite *Priscula* and *Physocyclus*, with a reversal in *Physocyclus mysticus* and an independent gain in *Artema*. 3. It could be gained three times independently.

Character 56. Tarsal organ shape: *(0) flat (exposed; see figs. 79–96); (1) cup-shaped (capsulate, see figs. 61–78).* Capsulate tarsal organs are primitive. The rim of the capsule has been reduced at least three times, resulting in an exposed tarsal organ: at least once in ninetines, once in the New World clade, and once in *Priscula*.

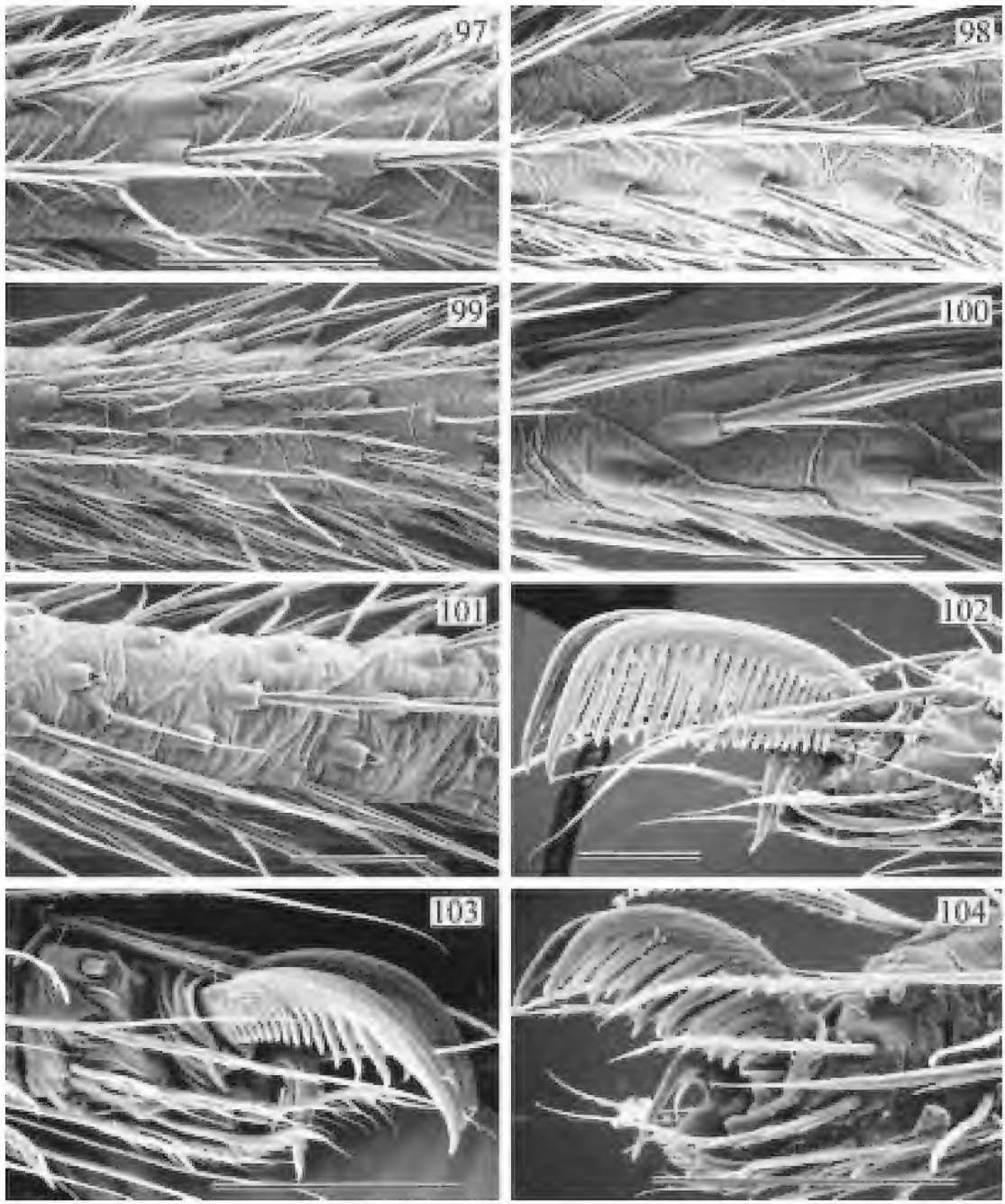
Character 57. Orifice of capsulate tarsal organ: *(0) wide: > 35% of outer diameter; (1) narrow: < 35% of outer diameter.* This character refers primarily to the relative size of the orifice, but covaries with the absolute size of the organ: in ninetines the diameter of the tarsal organ is around 3 μm, while in other pholcids with a capsulate tarsal organ, the diameter ranges from about 15 to 20 μm. It must be emphasized that this is not simply correlated with body size, as both large and tiny species of the *Pholcus* group have the large tarsal organ with wide opening, with little variation in absolute size. Thus, the derived ninetine tarsal organ is the only unambiguous synapomorphy of ninetines, while the short legs and possibly correlated characters (see char. 32) may or may not be a synapomorphy.

Character 58. Position of tarsal organ: *(0) not elevated; (1) elevated on stalk.* State (0) is primitive. Only *Priscula* is here coded as "1" (see fig. 96), although tarsal organs may be elevated in other taxa too (e.g., figs. 77, 86, 95), though significantly less so.

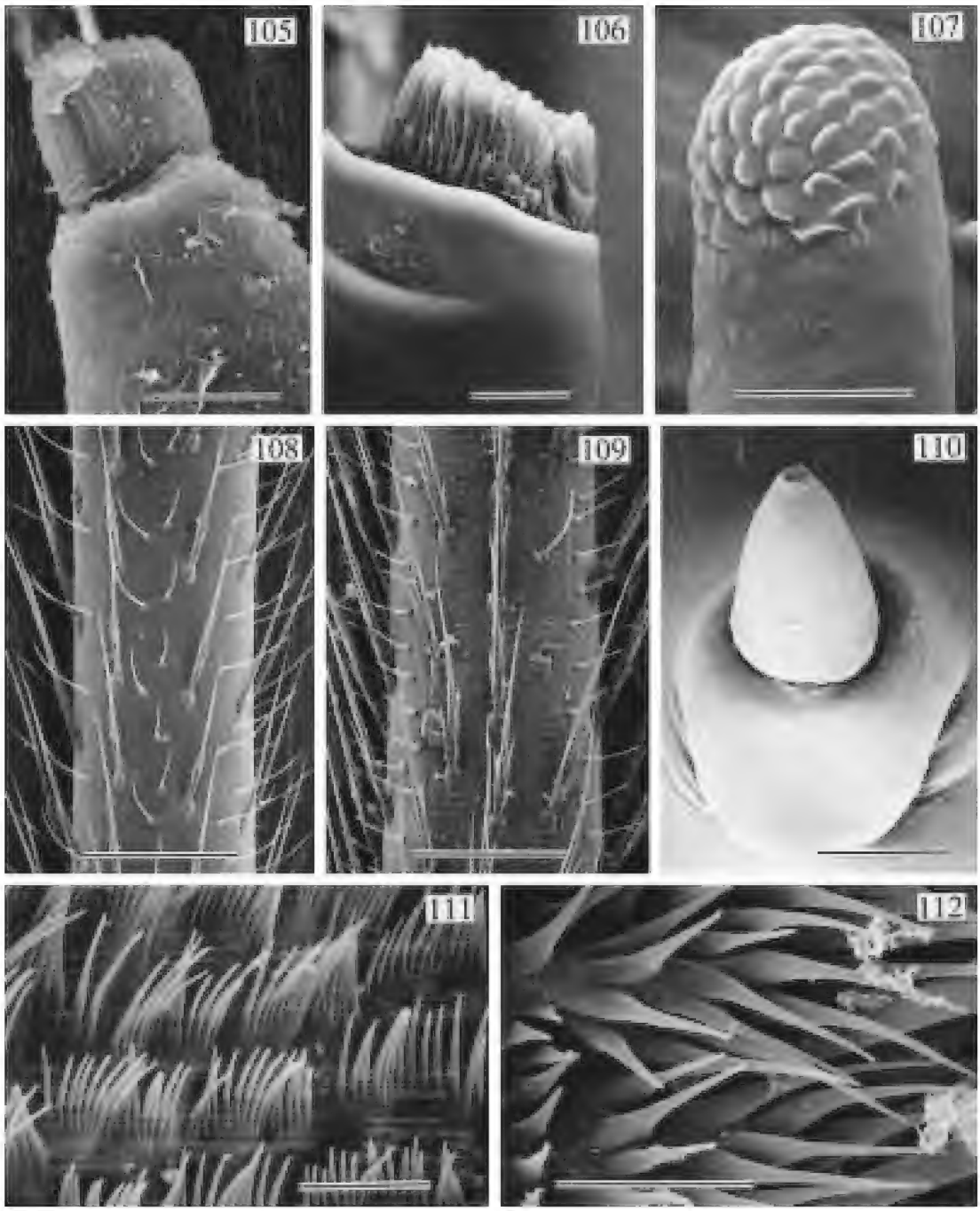
Character 59. Bulbal projection prolateroventrally: *(0) absent; (1) present (cf. figs. 43, 45 in Huber, 1998b).* This unique projection defines the genus *Ixchela*, n. gen.

Character 60. Embolus: *(0) tubular and sclerotized; (1) tubular and membranous; (2) "absent."* State (2) refers to the situation where, instead of a simple, cylindrical, tubular structure, there is a complex, usually conical projection of the genital bulb that I provisionally call "embolar division" in the descriptive part (see figs. 52, 54 for typical embolar divisions). In some cases (e.g., *Teuia*, fig. 1261), the embolar division comes superficially very close to a true embolus. The primitive condition of this character is ambiguous. Three scenarios are equally supported: (1) Primitive pholcids had a sclerotized embolus that was then transformed into a membranous embolus in pholcines and reduced in all other pholcids. (2) Primitive pholcids had a membranous embolus that was then reduced in all pholcids except pholcines. (3) The reduction of the embolus is a synapomorphy of Pholcidae, and the membranous embolus is not homologous to the embolus of other haplogynes.

Character 61. Embolus spine: *(0) absent; (1) present (cf. fig. 53).* In those pholcids that have an embolus, the absence of a spine at the tip is primitive. Spines have evolved independently in *Metagonia* and *Spermophora*.



Figs. 97–104. Pseudosegmentation on the tarsi, and tarsal claws (all from male legs). **97**. *Holocnemus hispanicus* Wiehle. **98**. *Crossopriza lyoni* (Blackwall). **99**. *Artema atlanta* Walckenaer. **100**. *Pholcus phalangioides* (Fuesslin). **101**. *Priscula* sp. from Peru (Cajamarca: Cutervo; in CCR). **102**. *Priscula ulai* González-Sponga. **103**. *Aymaria conica* (Banks). **104**. *Ibotyporanga naideae* Mello-Leitão. Scale lines: 60 μm.



Figs. 105–112. Miscellaneous structures. **105**. *Leptopholcus dalei* (Petrunkevitch), modified hair at tip of male palpal trochanter apophysis. **106**. *Micropholcus fauroti* (Simon), modified hair at tip of male palpal trochanter apophysis. **107**. *Metagonia maldonado*, n. sp., tip of clypeal apophysis. **108**. *Modisimus dominical* Huber, male femur, showing vertical (and "normal") hairs. **109**. *Ibotyporanga naideae* Mello-Leitão, male tibia, showing vertical (and "normal") hairs. **110**. *Coryssocnemis simla*, n. sp., spine on male femur 2. **111–112**. *Modisimus dominical* Huber, pseudotrichia on inner surface of male palpal coxae (endites). Scale lines: 100 μm (108–109), 20 μm (107, 110), 5 μm (105–106, 111–112).

CHARACTERS NOT SCORED

Several characters might be informative for a phylogenetic analysis, but are not included in the matrix. I will briefly review some of these characters here, partly with the hope that some of them might be usefully included in future analyses.

Probably most conspicuous is the absence of any reference to opisthosoma shape, as this is a character that often allows a first quick genus identification from a distance. However, there are so many shapes (at some point I coded up to six different basic shapes) that it is almost impossible to code them unambiguously. Moreover, opisthosoma shape may vary widely even within males of a single species (in females, of course, even more).

Only three characters (char. 53–55) related to the shape of the procursus were scored, although there is evidently much more information in it, especially on and below generic level. For example, it is easy to immediately recognize a *Priscula* procursus, but coding it objectively (i.e., other than "procursus prisculine: yes/no") proved impossible for me.

A possibly informative character at higher level concerns the "normal" tactile hairs on the legs. For example, in specimens of the *Pholcus* group, the legs are sparsely covered with long hairs, while in many representatives of the New World clade (e.g., *Mesabolivar*), the hairs are much shorter and stand much more densely. However, many pholcids seem to be just intermediate, so coding seems difficult.

Several SEM characters might be informative. Almost unexplored is the ultrastructure of procursus and bulb, and preliminary data show an astounding diversity and complexity (e.g., figs. 42–60). The same may be true of the inner sides of the palpal coxae (figs. 111–112). The strange modified hair at the tip of the palpal trochanter apophysis in *Leptopholcus dalei* (Petrunkevitch) and *Micropholcus fauroti* (Simon) (figs. 105–106) is probably a synapomorphy of several genera within the *Pholcus* group, but has not been searched for in any other species. The shape of the epiandrous spigots, as well as their positions are possibly informative (in addition to the mere absence or presence). They can be short or long, and can stand either in two widely separated groups, or in a single row [e.g., figs. 122–123; cf. Griswold et al.'s (1999) survey of this character]. Also, the shapes of the "lips" of the male gonopore vary widely (figs. 130–141), but part of this may be artificial. Also, the spigots on the spinnerets vary considerably in shape [both the ALS piriform gland spigots, and the PMS spigots (figs. 146–199)]. A much more comprehensive SEM survey would be necessary to evaluate the usefulness of these characters.

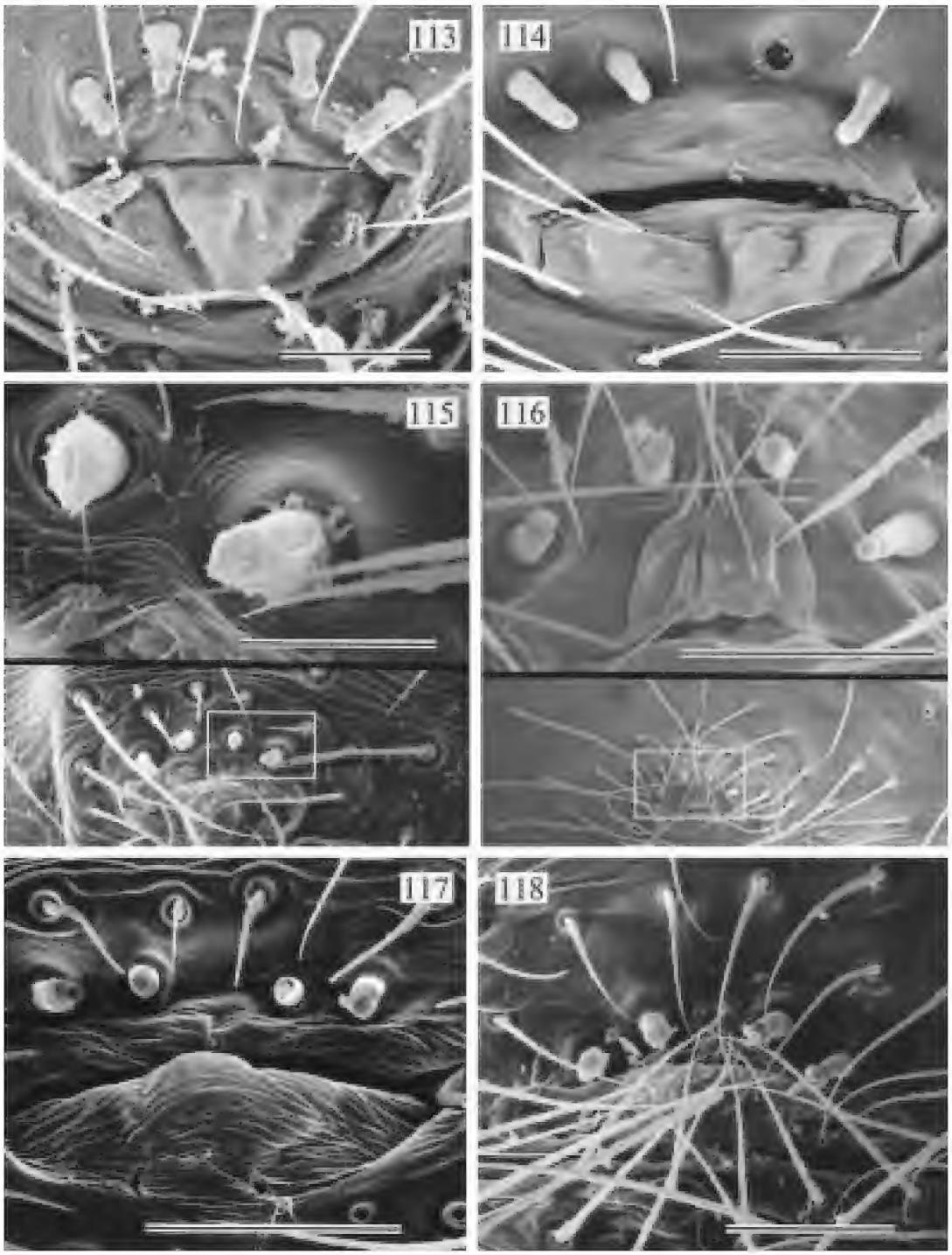
Previous authors have given much attention to the eye pattern, in particular the curvature of eye rows. The curvature of the posterior eyes is partly included in character 3, but the position of the AME might also be informative (compare for example figs. 3, 5). However, it is difficult to standardize the angle of view to code this character.

The tip of the female palp may be informative (e.g., with or without terminal claw), but I have not routinely scanned females, so I lack sufficient data on this character. Lack of data also led to the exclusion of the "valve" in the female internal genitalia. Previous studies (Brignoli, 1981; Huber, 1998d) have argued that this character might define a large group of genera (the somewhat misnamed "Old World group").

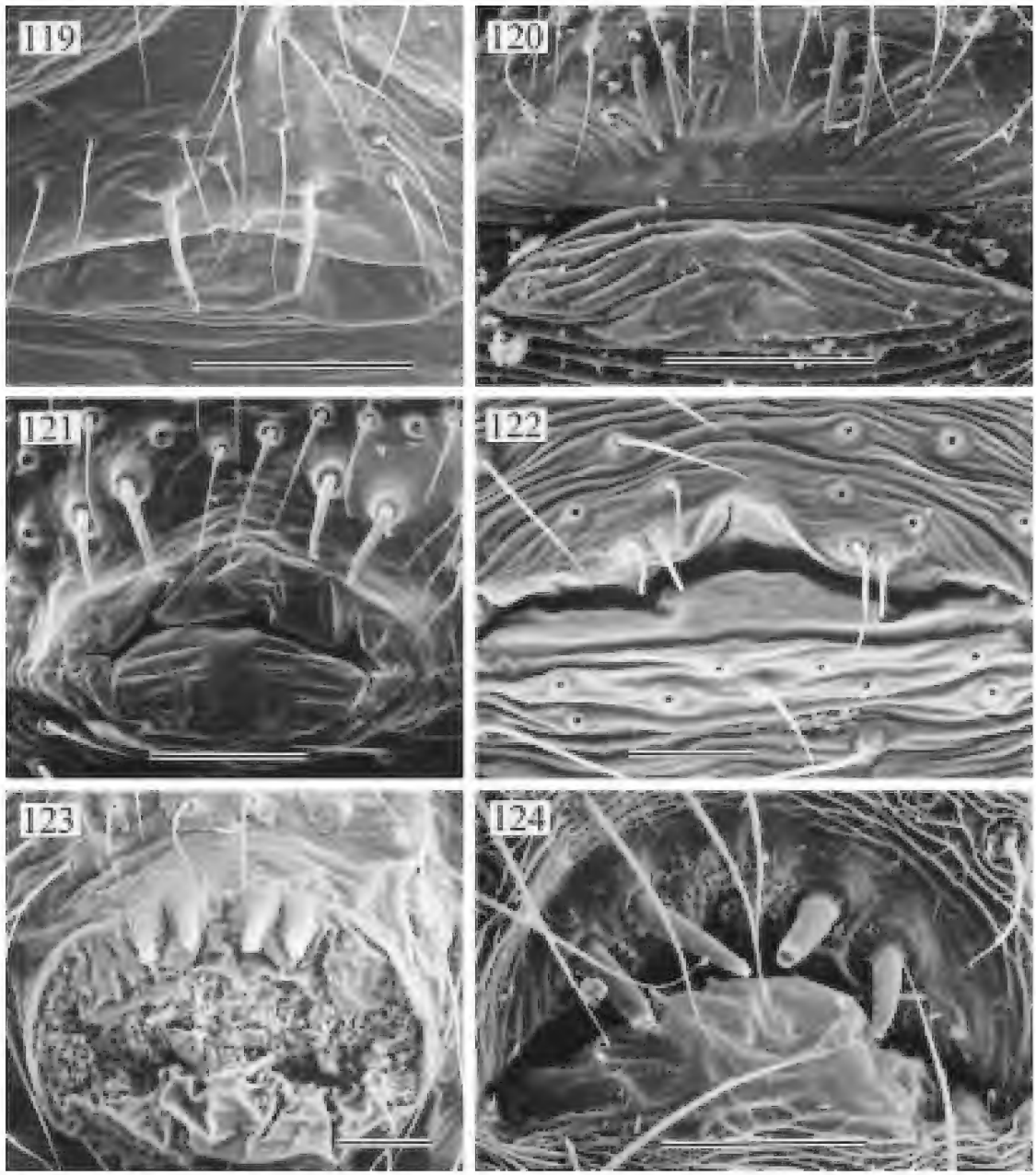
Some pholcids, especially ninetines, have a row of very thick hairs dorsally on the male palpal tarsus (see fig. 77 for a single such hair; figs. 371, 382, 391, 452 for overviews), but these hairs are often lost, and it seems difficult to code them, as they seem structurally not different from other hairs on the tarsus, but differ just in length and diameter.

There is possibly informative variation in the pore plates in the female internal genitalia (see for example figs. 216, 672, 810, 1023, 1150). Even the absence of pores (whether true or apparent) may be informative. I could not find pores in several ninetines. However, this character seems to be informative at a lower level (i.e., species groups) rather than at generic level. The same seems to be the case with receptacles (e.g., paired: figs. 1298, 1307 versus unpaired: figs. 1344, 1150), with the added complication that these membranous structures are often quite difficult to see.

Finally, the long ventral trochanter apoph-



Figs. 113–118. Male gonopore with epiandrous spigots in *Metagonia*. **113**. *M. argentinensis* Mello-Leitão. **114**. *M. maldonado*, n. sp. **115**. *M. delicata* (O. Pickard-Cambridge). **116**. *M. blanda* Gertsch. **117**. *M. uvita* Huber. **118**. *Metagonia rica* Gertsch. Scale lines: 30 μm (113–114, 116–118), 10 μm (115).

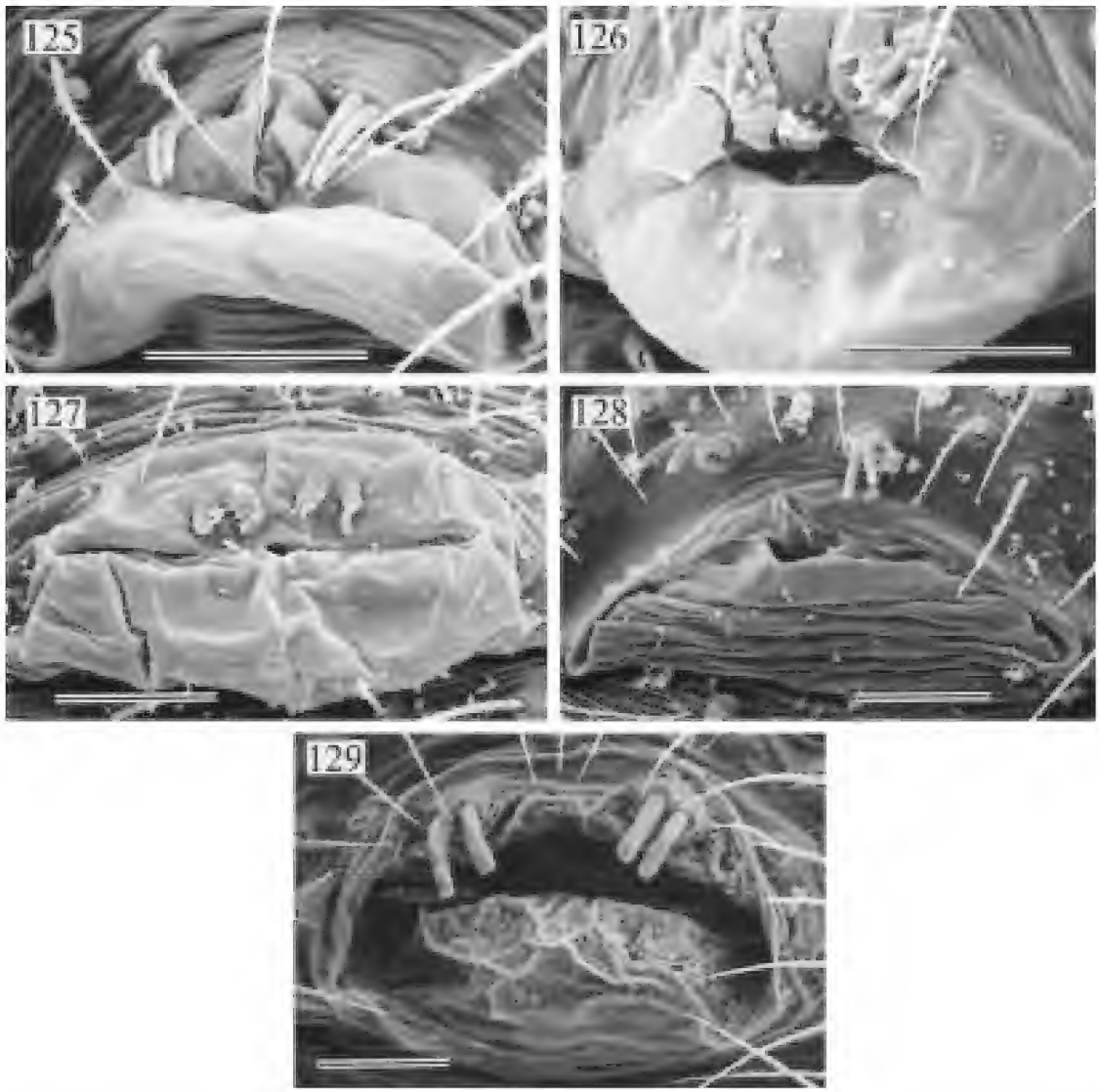


Figs. 119–124. Male gonopore with epiandrous spigots in various Old World genera. **119**. *Smeringopus pallidus* (Blackwall). **120**. *Holocnemus pluchei* (Scopoli). **121**. *Artema atlanta* Walckenaer. **122**. *Spermophora senoculata* (Dugès). **123**. *Micropholcus fauroti* (Simon). **124**. *Calapnita vermiformis* Simon. Scale lines: 100 μm (119–121), 30 μm (122–124).

ysis characteristic for the male palps in the *Pholcus* group is not coded, as it is functionally correlated with the proximolateral apophysis on the chelicera (character 40) (Huber, 1995).

CLADISTIC ANALYSIS

Appendix 1 shows the complete matrix used for the cladistic analysis, including all terminal taxa and characters scored that are



Figs. 125–129. Male gonopore with epiandrous spigots in ninetines. **125**. *Ninetis namibiae*, n. sp. **126**. *Tolteca hesperia* (Gertsch). **127**. *Galapa baerti* (Gertsch). **128**. *Ibotyporanga naideae* Mello-Leitão. **129**. *Pholcophora americana* Banks. Scale lines: 30 μm.

listed above. In almost all cases, real species rather than hypothetical constructs were used. In only three cases the coding reflects a hypothetical taxon ground plan, based on the character state of close relatives (see Characters Scored section above, char. 1, 14). All multistate characters were treated as nonadditive.

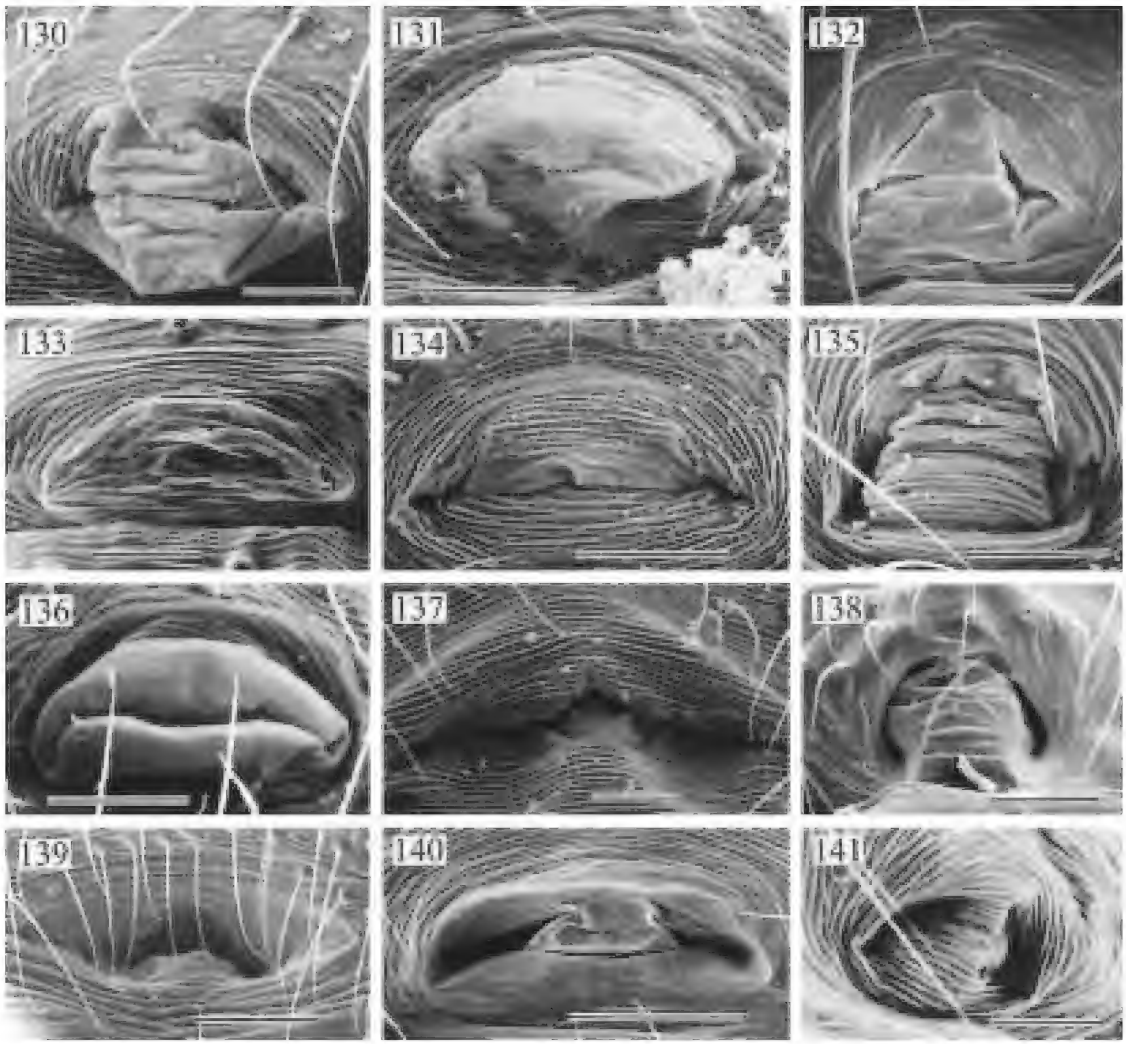
Using NONA with higher values of "hold/n" and "mult*n," or Hennig86 with the "mh*" and "bb*" commands, resulted in hundreds of most parsimonious trees. For example, the commands "hold/50" with "mult*100" in NONA resulted in 250 most parsimonious trees of length 155 (CI = 41; RI = 77), while the trees found by Hennig86 overflowed the tree buffer at 1037 most parsimonious trees with the same statistics. However, these high numbers resulted mainly from shifting of taxa within subfamilies, while the basic structure of the trees was consistent with one of two "tree islands" or ba-

sic topologies. One of these topologies required the pseudosegmentation of the tarsi to be reduced (to become indistinct and broken into subdivisions), and then neatly restored, while in the other topology the pseudosegmentation was only reduced. While such a reversal is not impossible theoretically, the solution requiring only reduction seems biologically more parsimonious. Deletion of these trees from the 250 NONA trees above left only 10 trees. A similar problem occurred in 6 of these 10 trees, where the "pup" apophysis on the male palpal femur (char. 49) was gained (by the ancestor of the New World clade), then reduced (in the ancestor of the sister group of *Anopsicus* + *Psilochorus*), and then regained (by the ancestor of *Modisimus* and some other genera). This apophysis serves to lock the genital bulb after it has been rotated at the onset of copulation, and the mechanics are virtually identical in *Psilochorus*, *Anopsicus*, and *Modisimus* (Huber, 1994, 1998a). Thus, solutions requiring a single gain, at least in the taxa where identical function has been established by direct observation, seem more parsimonious. Finally, one of the remaining trees required the AME to be lost and regained, while the other trees required only the loss of the AME. With the settings above, this left only three NONA trees, which differed only with respect to the scope of node 32 (see appendix 2): in the cladogram shown, *Litoporus* and *Pomboa* are included in node 32, while in the second tree, *Litoporus* was outside (i.e., branching off the large polytomy), in the third tree *Pomboa* + *Litoporus* were outside node 32.

Hennig86 found not only the same two topologies as NONA, but a third one in addition. Using the same criteria of tree selection as applied to the NONA trees above, only one tree was left, belonging to this third topology. The only significant difference between this Hennig86 tree and the preferred tree from NONA shown in appendix 2 was that instead of a basal trichotomy, ninetines (node 45) were the sister group to all other pholcids. The single other difference was that the three distal *Metagonia* species were not resolved as in appendix 2. It is worth noting that this basal dichotomy into ninetines and all other pholcids is exactly what Simon (1893b) proposed over a century ago.

The following major clades were recovered in these analyses with equally weighted characters (appendix 2): (1) *Metagonia* (node 54), supported by pseudoentelegyny (char. 16), asymmetrical female internal genitalia (char. 20), the hinged process (char. 53), and under ambiguous optimization also by the embolar spine (char. 61) and reduction of AME (char. 1); (2) the *Pholcus* group sensu Huber (1995) (node 57), supported by the epigynal apophysis (char. 17), lateral chelicera apophyses (char. 40), cheliceral apophysis with imbedded hairs (char. 46), the shape of the male palpal tibia (char. 51), and (in the NONA trees only) the wide sternum (char. 10); (3) pholcines (*Metagonia* + *Pholcus* group) (node 53), supported by the globular hairs on the male chelicerae (char. 44), and (either under ambiguous optimization or in only one of the preferred topologies) also by the grooves on the cheliceral hairs (char. 45), the tubular membranous embolus (char. 60), and the embolus spine (char. 61); (4) ninetines (node 45), supported in one topology by the ninetine tarsal organ (char. 57) and by the short legs and possibly correlated characters (char. 27, 31, 32, 34), in the second topology only by the ninetine tarsal organ; (5) holocnemines (*Artema*, the *Holocnemus* group sensu Timm (1976), and *Physocyclus* + *Priscula*) (node 7), supported by the reduced pseudosegmentation of the tarsi (char. 35), the pointed cheliceral lamina (char. 38), and under ambiguous optimization also by the procursus brush (char. 55); (6) the New World clade (node 14) consisting of all native New World taxa except ninetines, *Metagonia*, *Physocyclus*, and *Priscula;* supported by the reduction of epiandrous spigots (this rests on an ambiguous optimization) and of ALS piriform gland spigots (char. 12, 14), by the retrolateral coxal apophysis (char. 47), and the exposed tarsal organ (char. 56); (7) a clade consisting of holocnemines and the New World clade (node 6), supported by the medially elevated ocular area (char. 4), the thoracic groove (char. 6), and (in the NONA trees only) the wide sternum (char. 10).

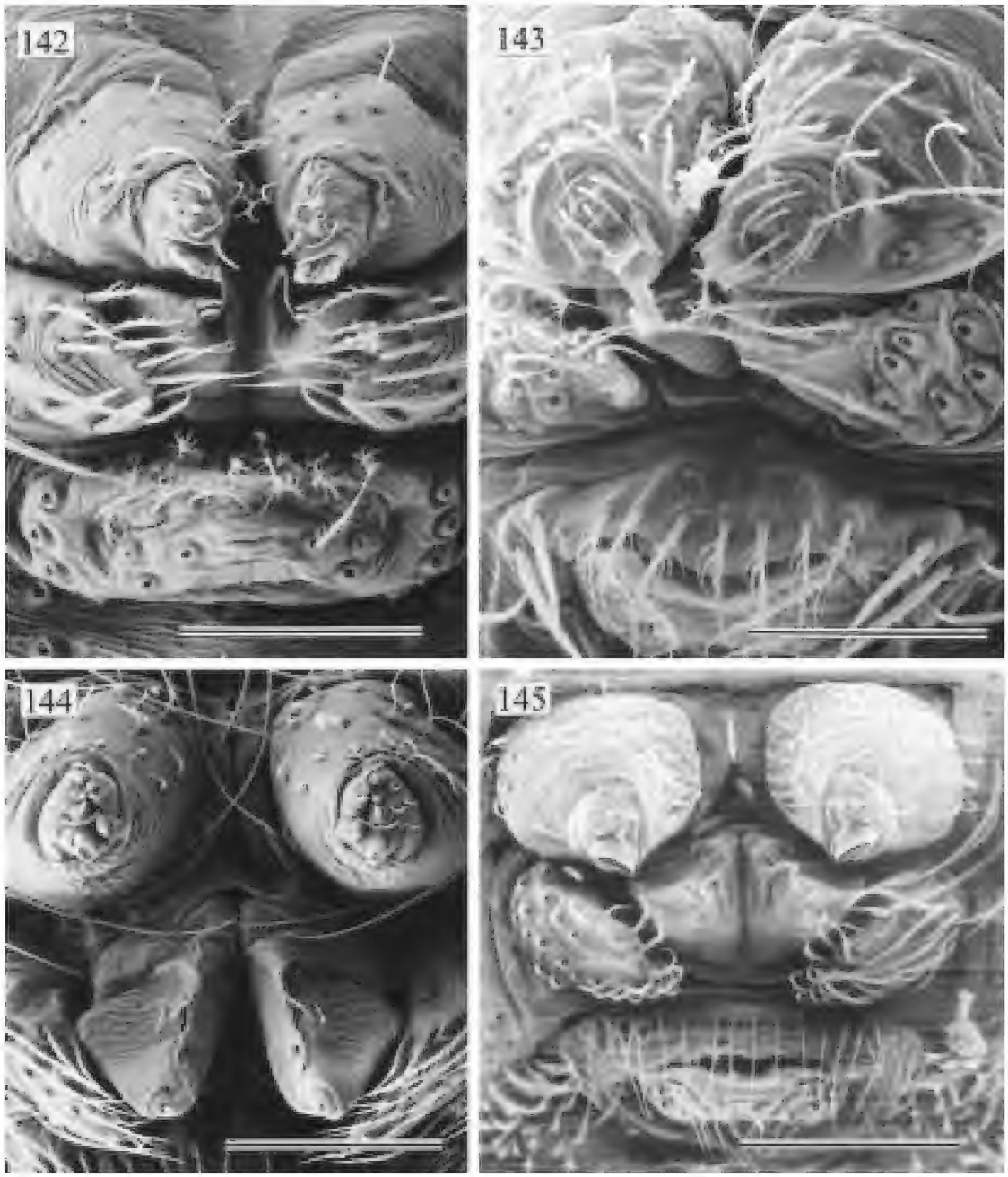
The following is the clade distinguishing the two topologies: a clade including all



Figs. 130–141. Male gonopore without epiandrous spigots. **130**. *Pisaboa silvae*, n. gen., n. sp. **131**. *Blancoa piacoa*, n. gen., n. sp. **132**. "*Psilochorus*" sp. from Australia: Magnetic Island. **133**. *Aucana platnicki*, n. gen., n. sp. **134**. *Carapoia ocaina*, n. sp. **135**. *Tupigea lisei*, n. gen., n. sp. **136**. *Mecoloesthus longissimus* Simon. **137**. *Modisimus dominical* Huber. **138**. *Mesabolivar iguazu*, n. sp. **139**. *Physocyclus globosus* (Taczanowski). **140**. *Priscula* sp. from Peru (Cajamarca: Cutervo; in CCR). **141**. *Litoporus dimona*, n. sp. Scale lines: 100 μm (139–140), 50 μm (132, 134, 138), 25 μm (130–131, 133, 135–137, 141).

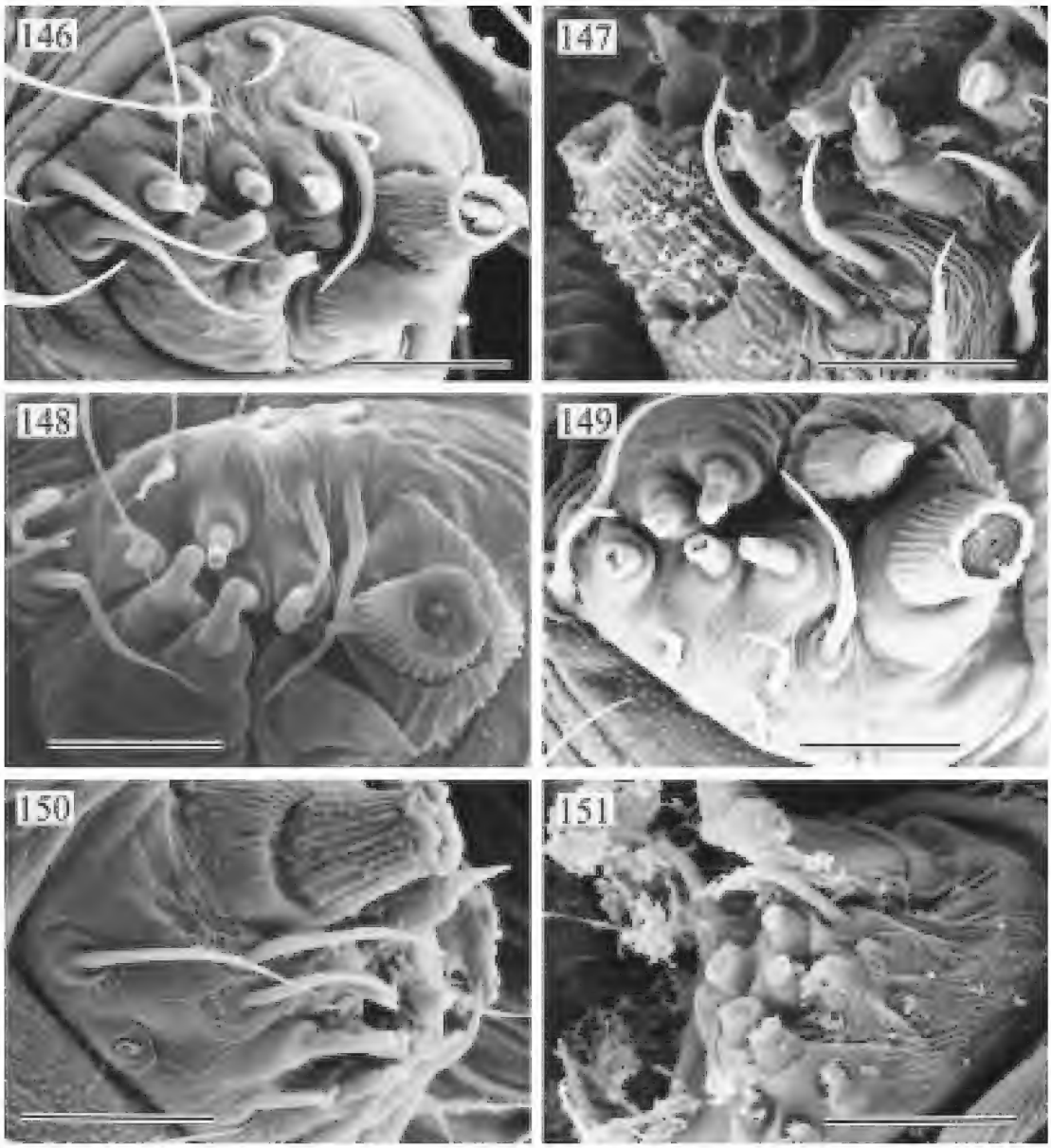
pholcids except ninetines, supported unambiguously only by the wide sternum (char. 10), under ambiguous optimization also by the long legs and possibly correlated characters. Since neither solution seems preferable, the cladogram in appendix 2 shows the NONA tree with the basal trichotomy in Pholcidae.

In addition to the analysis using equally weighted characters, I employed two types of weighting: implied weighting using Pee-Wee, and successive weighting using Hennig86. All trees found by Pee-Wee (using all six settings of the concavity constant with "hold/50" and "mult*50") were characterized by a triple independent gain of epiandrous spigots within pholcids: in *Artema*, in pholcines, and in ninetines. In addition to this repeated regain of a character that is probably plesiomorphic in haplogyne spiders (Lo-



Figs. 142–145. Spinnerets, overview. **142**. *Papiamenta levii* (Gertsch), female. **143**. *Modisimus culicinus* (Simon), female. **144**. *Metagonia rica* Gertsch, male. **145**. *Artema atlanta* Walckenaer, male. Scale lines: 300 μm (145), 100 μm (142, 144), 50 μm (143).

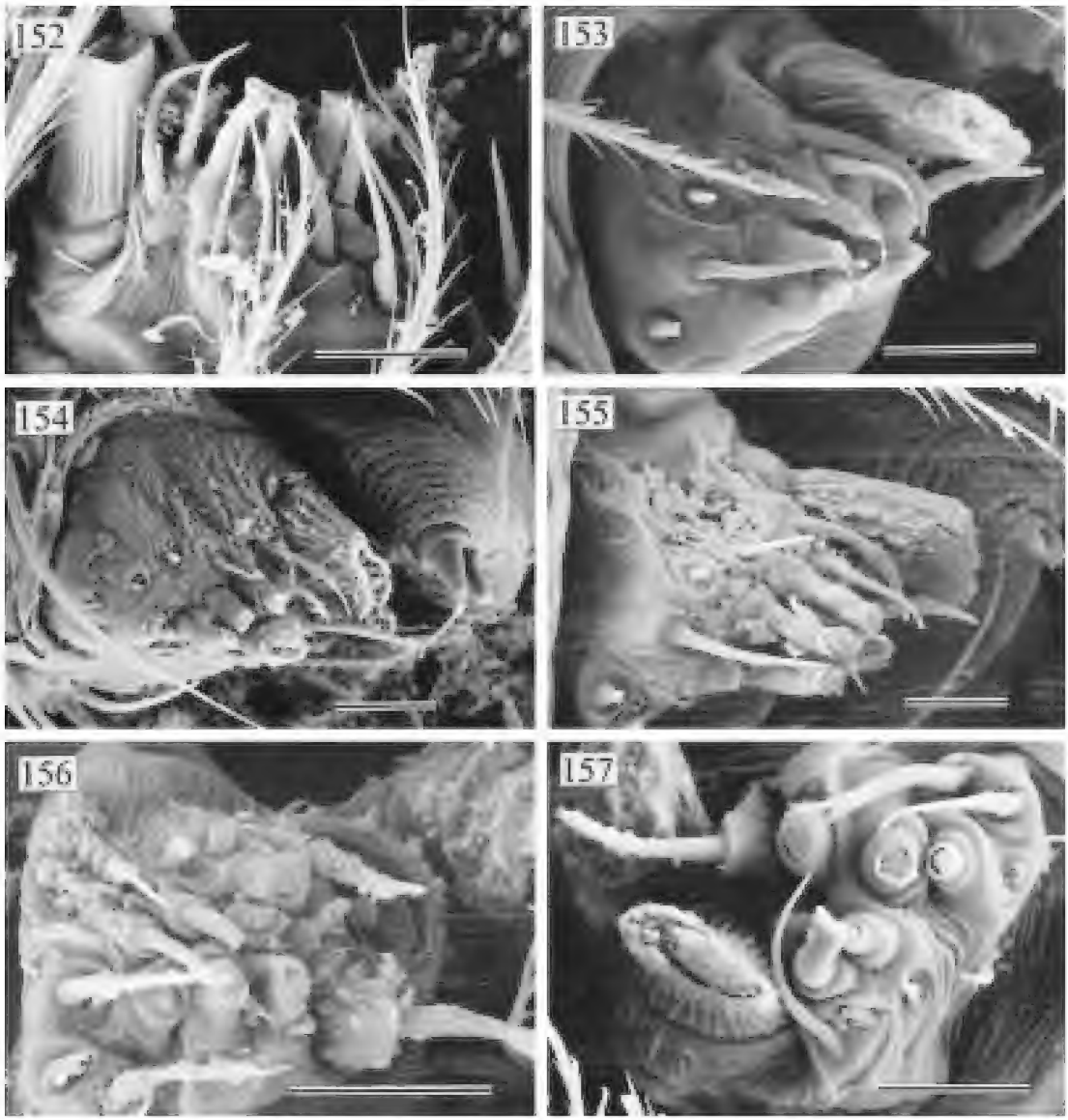
pez and Emerit, 1988), all trees had at least one additional comparably improbable transformation: at conc = 1, capsulate tarsal organs were regained three times, and AME were regained one to four times; at conc = 2, capsulate tarsal organs were regained one to three times; at conc = 3, either capsulate tarsal organs were regained two to three times, or ALS piriform spigots were regained; at conc = 4, either AME, or capsu-



Figs. 146–151. Anterior lateral spinnerets in *Metagonia* spp., and in *Chisosa diluta*. **146**. *M. maldonado*, n. sp., male. **147**. *M. argentinensis* Mello-Leitão, male. **148**. *M. blanda* Gertsch, male. **149**. *M. rica* Gertsch, male. **150**. *M. globulosa*, n. sp., female. **151**. *Chisosa diluta* (Gertsch and Mulaik), female. Scale lines: 15 μm.

late tarsal organs, or ALS piriform spigots were regained; at conc = 5 and 6, both ALS piriform spigots and capsulate tarsal organs were regained. Therefore, from an evolutionary perspective I consider the cladograms suggested by Pee-Wee to be inferior to those of the analyses using equally weighted characters, and will not further discuss them.

Using the successive weighting option in Hennig86 unfortunately did not reduce the number of trees: the tree buffer continued to overflow at 1037 trees, which made it diffi-



Figs. 152–157. Anterior lateral spinnerets in ninetines. **152**. *Ninetis namibiae*, n. sp., male. **153**. *Tolteca hesperia* (Gertsch), female. **154**. *Papiamenta levii* (Gertsch), female. **155**. *Pholcophora americana* Banks, male. **156**. *Aucana kaala*, n. gen., n. sp., male. **157**. *Aucana platnicki*, n. gen., n. sp., female. Scale lines: 50 μm (154), 10 μm (152–153, 155–157).

cult to analyze the trees. Even the application of the criteria for tree selection discussed above did not reduce the number significantly. In all of the 1000 trees I analyzed in Clados, five of the major clades mentioned above were recovered: *Metagonia* (clade 54), the *Pholcus* group (clade 57), ninetines (clade 45), holocnemines (clade 7), and the New World clade (clade 14). They were supported by the same characters as in the analysis using equally weighted characters, including the same ambiguities. However, their interrelationships were extremely ambiguous: three basic topologies were found, none of them identical to the two topologies found in the analyses using equally weighted characters: (1) ((*Metagonia* + *Pholcus* group) + ninetines + holocnemines) + New World

clade; (2) *Metagonia* + (*Pholcus* group + (ninetines + holocnemines + New World clade)); (3) *Metagonia* + ninetines + (*Pholcus* group + (holocnemines + New World clade)). Two differences from the analyses using equally weighted characters seem particularly noteworthy: first, pholcines (*Metagonia* + *Pholcus* group) were recovered in only one of the three topologies found by successive weighting; second, the *Modisimus* group sensu Huber (1998a) consistently also included South American genera (see char. 49 in Characters Scored section above). The main conclusions from these analyses using successive weighting are that the data matrix probably includes too much homoplasy to allow a satisfying resolution, and that the cladogram presented in appendix 2 must be seen as a working hypothesis.

Within the context of this paper, the cladistic analysis offers two main conclusions. First, a hypothesis concerning the direction of evolutionary transformation, supported by both the analyses using equally weighted characters and successive weighting, can be proposed for 41 of the 54 characters scored that vary within pholcids. In four additional characters, the polarity is ambiguous in the analysis using successive weighting only; see Characters Scored above. Second, New World pholcids are an assemblage of elements from all major clades within the family, but to very differing degrees: the *Pholcus* group is represented only by some *Pholcus* species in the eastern United States, some *Leptopholcus* species on the Antilles, and some synanthropic introduced species. *Metagonia* is an exclusive New World genus. Ninetines are represented in the New World by several genera, but too little is known about Old World genera to allow a well-founded assessment of the relationships between Old and New World ninetines. Holocnemines are represented by the North American genus *Physocyclus* and the South American genus *Priscula* (plus some synanthropic introduced species of the *Holocnemus* group). Finally, the New World clade includes the majority of New World genera, consisting of New World genera only.

I prefer to use informal names rather than formal subfamily names (such as Ninetinae, Pholcinae, etc.) for two reasons. First, I personally consider at least two of the four groups as not extremely convincing: (1) Ninetines, because they are either only supported by the ninetine tarsal organ, or, in addition to that, by a set of characters that seem to be interrelated (leg length, etc.; see above). Short legs may just represent an adaptation to the same or very similar type of habitat, i.e., leaf litter and interstices of the soil structure. (2) Holocnemines, because, if just a few characters were differently weighted (e.g., char. 12, 44–46, 56), *Priscula* would seem closer to the New World clade whereas the *Holocnemus* group would seem closer to pholcines. It seems even more suspicious if one considers that *Priscula* is a New World genus (i.e., geographically in the same place as the New World clade), while the *Holocnemus* group is native to the Old World (as the *Pholcus* group).

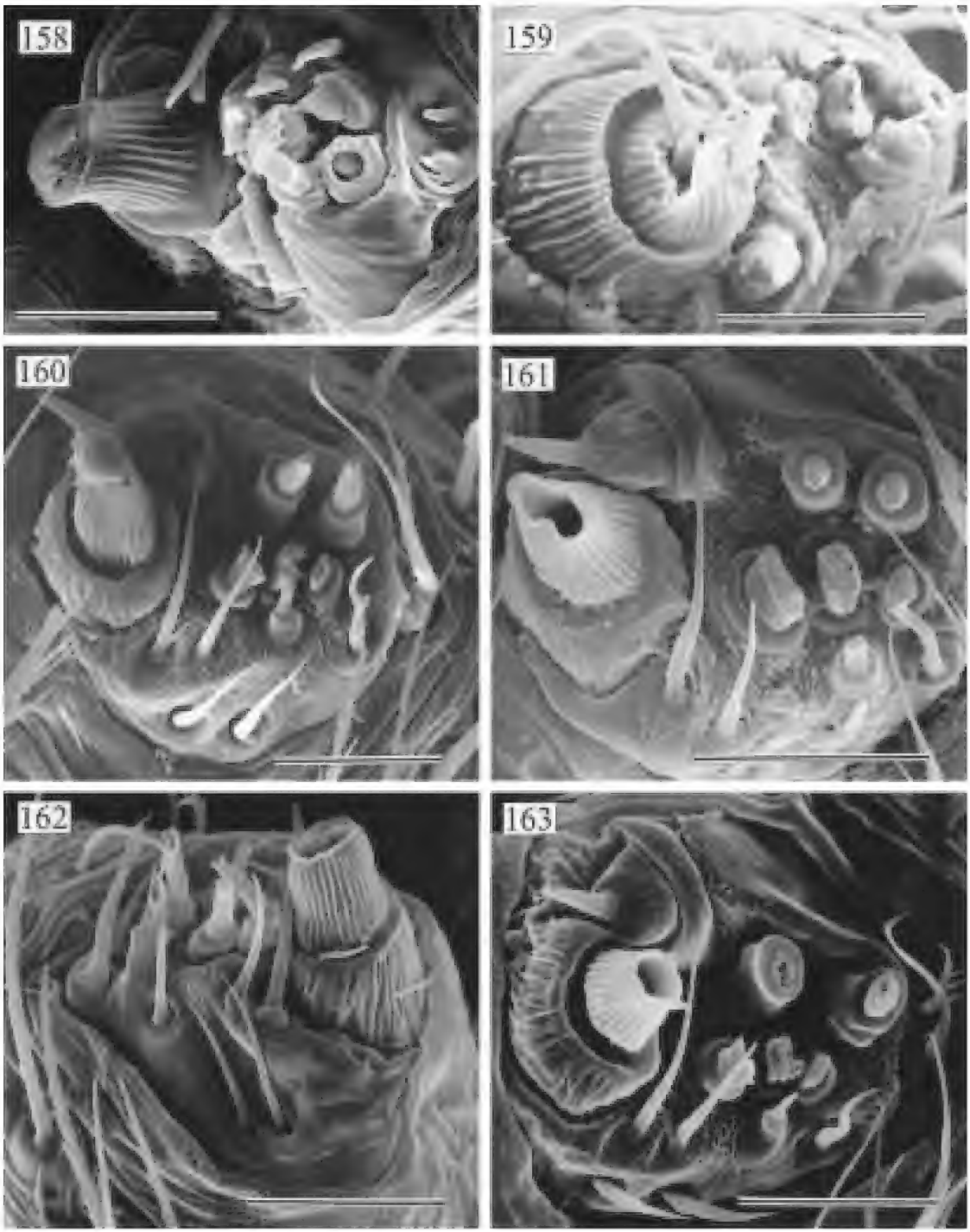
Second, names like Ninetinae, Pholcinae, etc. have been used before with different and varying meanings. Using the same formal names would require an extended clarification of the changes in scope and meaning, which I do not find fruitful at this point. Instead of discussing the further details of the trees here, I refer this to the respective sections in the genus descriptions (the sections titled Monophyly and Generic Relationships).

TAXONOMY

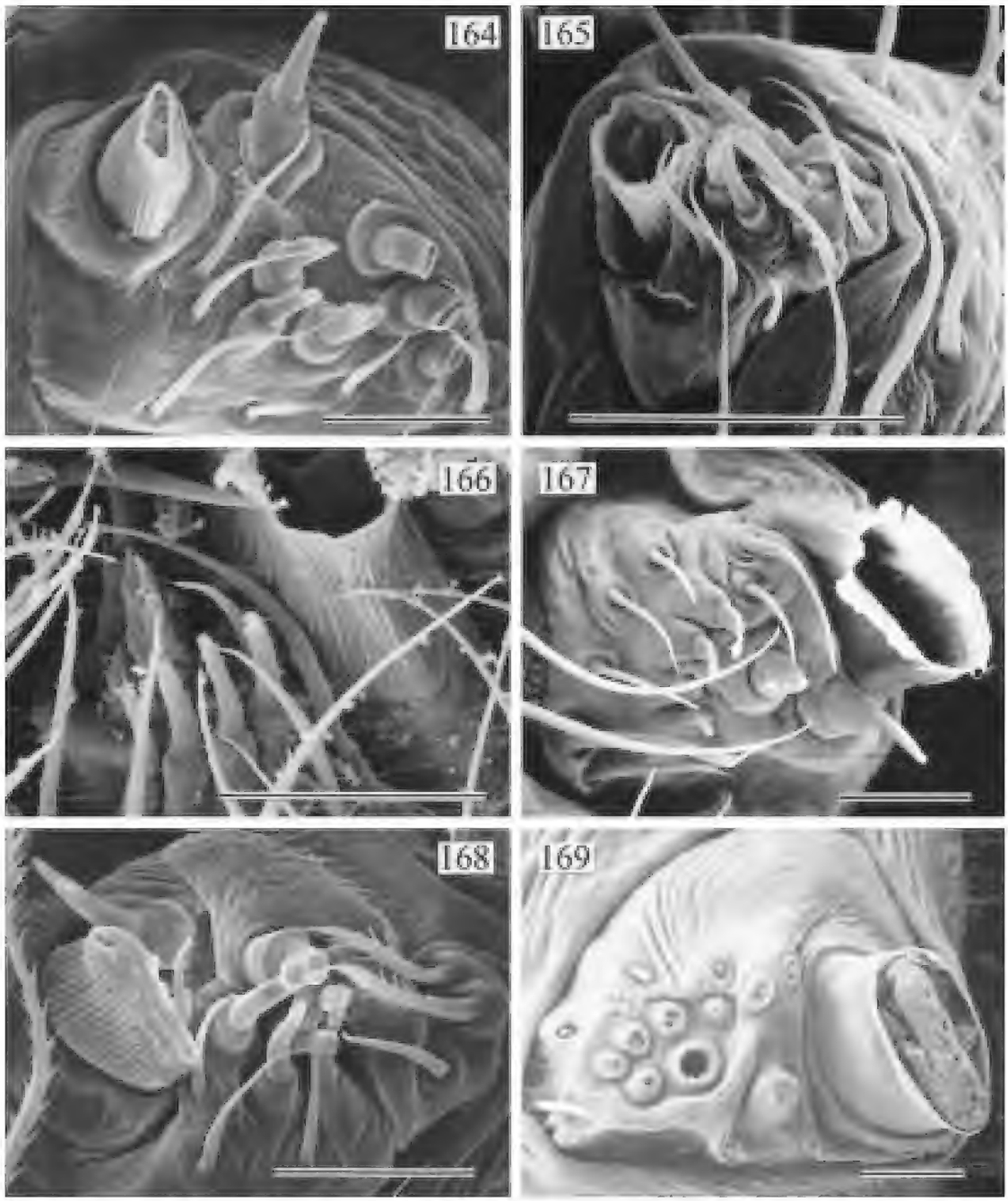
PHOLCIDAE KOCH, 1851
(Synonymies: Bonnet, 1958: 3602)

Diagnosis

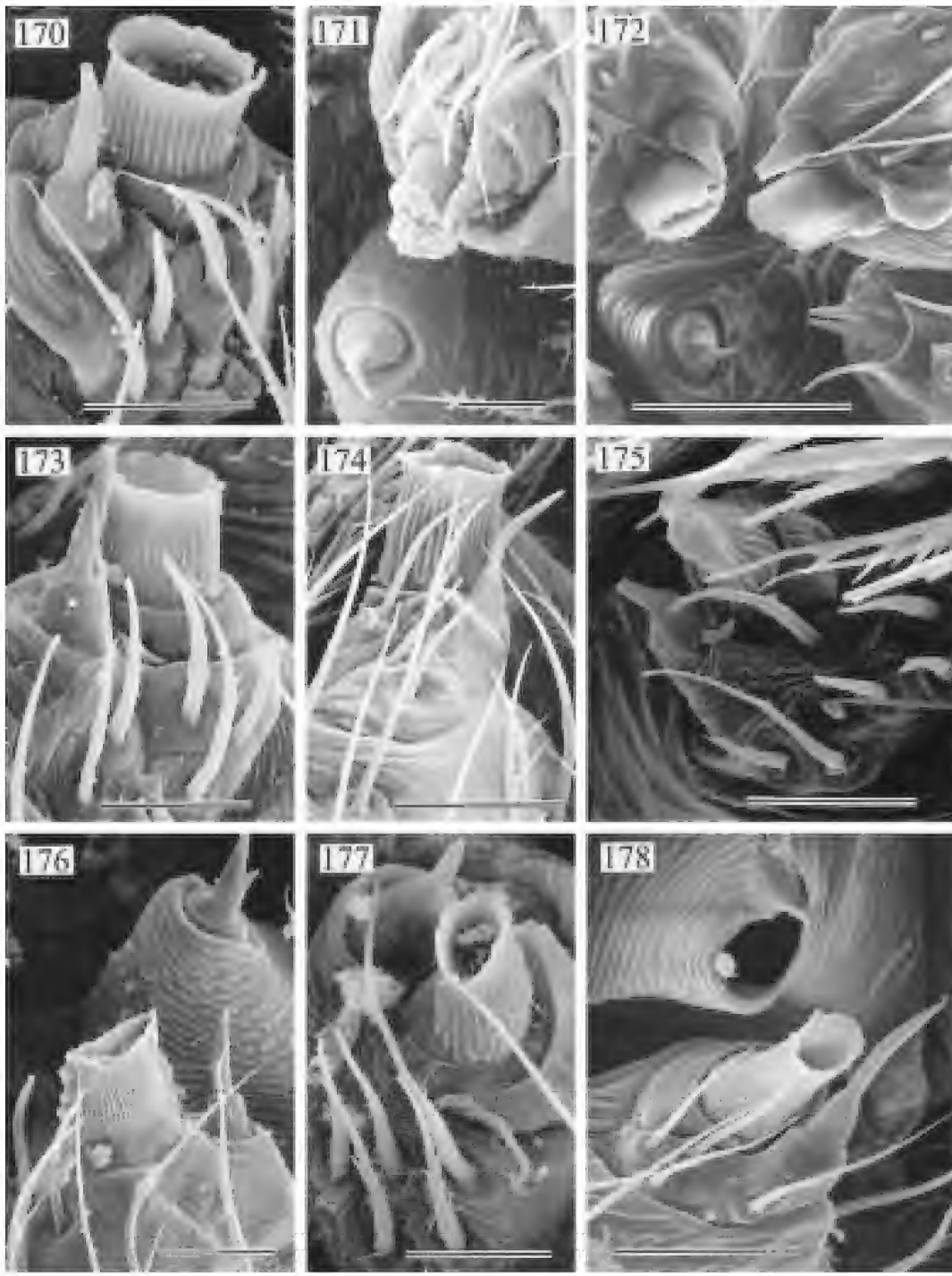
Pholcids are small to medium-sized spiders (~ 1–15 mm body length), with a prosoma that is about as long as wide, but otherwise they are extremely variable in habitus. They are easily distinguished from other families (both from the putative sister taxon Diguetidae + Plectreuridae, and from generally similar spiders like Ochyroceratidae, Filistatidae, etc.) by the following characters: (1) Male palp with prominent retrola-



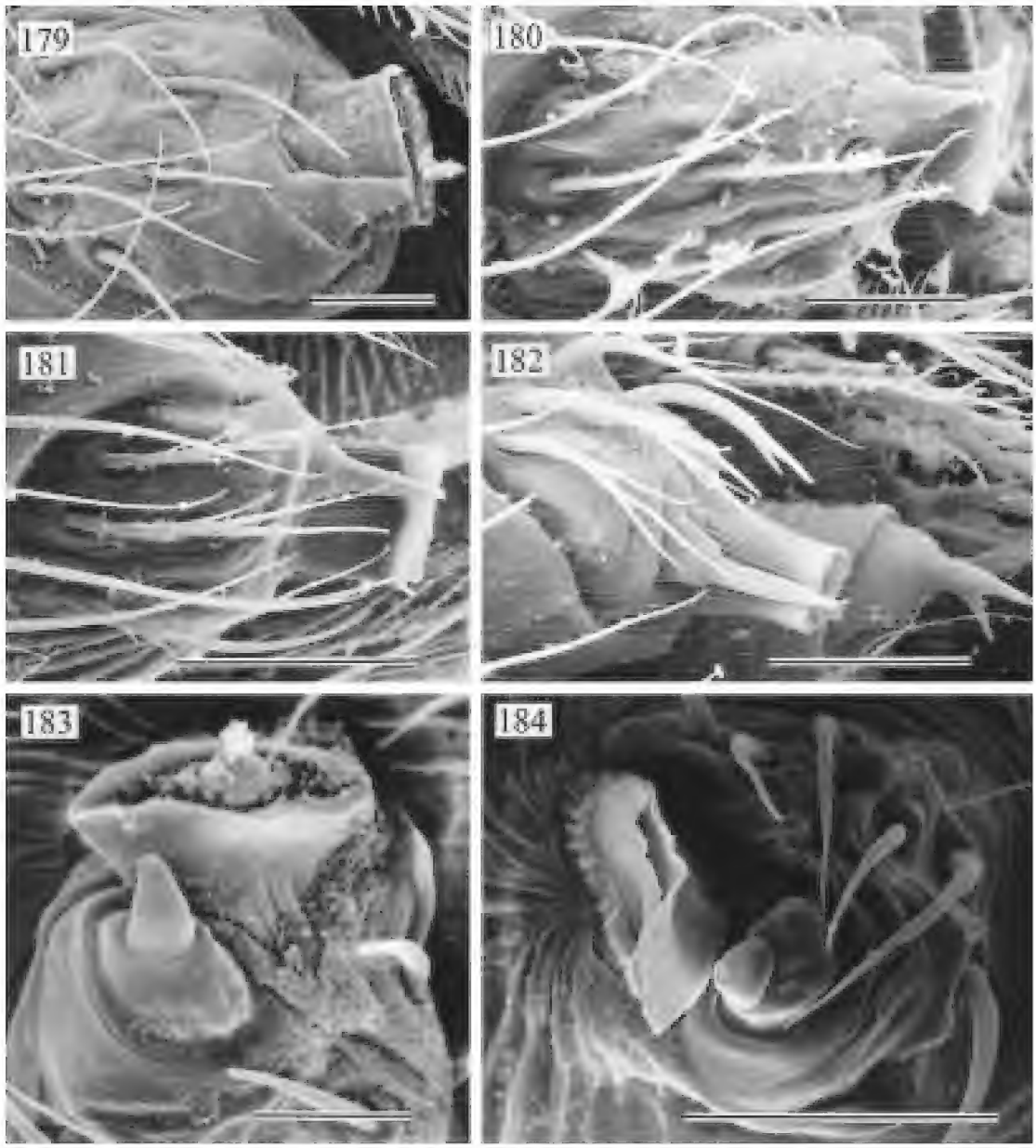
Figs. 158–163. Anterior lateral spinnerets in various Old World genera. **158–159**. *Micropholcus fauroti* (Simon), male. **160**. Unidentified genus and species (*Pholcus* group) from Sumatra, female. **161**. *Calapnita phyllicola* Deeleman-Reinhold, male. **162**. *Spermophora senoculata* (Dugès), male. **163**. *Uthina* sp. from Sumatra, male. Scale lines: 20 μm.



Figs. 164–169. Anterior lateral spinnerets. **164**. *Smeringopus pallidus* (Blackwall), female. **165**. *Holocneminus multiguttatus* (Simon), male. **166**. *Priscula ulai* González-Sponga, male. **167**. *Priscula* sp. from Peru (Cajamarca: Cutervo), male. **168**. *Physocyclus globosus* (Taczanowski), male. **169**. *Artema atlanta* Walckenaer, male. Scale lines: 30 μm.



Figs. 170–178. Anterior lateral spinnerets. **170**. *Tupigea nadleri*, n. gen., n. sp., male. **171**. *Tupigea lisei*, n. gen., n. sp., male. **172**. *Litoporus lopez*, n. sp., male. **173**. *Tupigea nadleri*, n. gen., n. sp., female. **174**. *Ibotyporanga naideae* Mello-Leitão, male. **175**. *Metagonia uvita* Huber, female. **176**. *Holocnemus pluchei* (Scopoli), male. **177**. *Calapnita vermiformis* Simon, male. **178**. "*Psilochorus*" sp. from Australia: Magnetic Island. Scale lines: 30 μm (172, 174, 176, 178), 10 μm (170–171, 173, 175, 177).



Figs. 179–184. Anterior lateral spinnerets. **179**. *Carapoia ocaina*, n. sp., male. **180**. *Mecoloesthus longissimus* Simon, male. **181**. *Pisaboa silvae*, n. gen., n. sp., male. **182**. *Blancoa piacoa*, n. gen., n. sp., male. **183**. *Mesabolivar huanuco*, n. sp., male. **184**. *Mesabolivar eberhardi*, n. sp., female. Scale lines: 30 μm (179, 181, 184), 15 μm (180, 182–183).

teral paracymbium (procursus) which is very rarely reduced to an inconspicuous lobe (figs. 466, 475). (2) Male chelicerae with sexual modifications, which are rarely absent. (3) Clypeus about as high as chelicerae are long. (4) Tarsi pseudosegmented; in some genera the pseudosegments are hardly visible under light microscopy, and seem secondarily fragmented into smaller sclerites (figs. 97–101). (5) The number of trichobothria on the tibiae of walking legs is reduced to three; rarely an individual has

one or more legs with only two trichobothria on the tibiae.

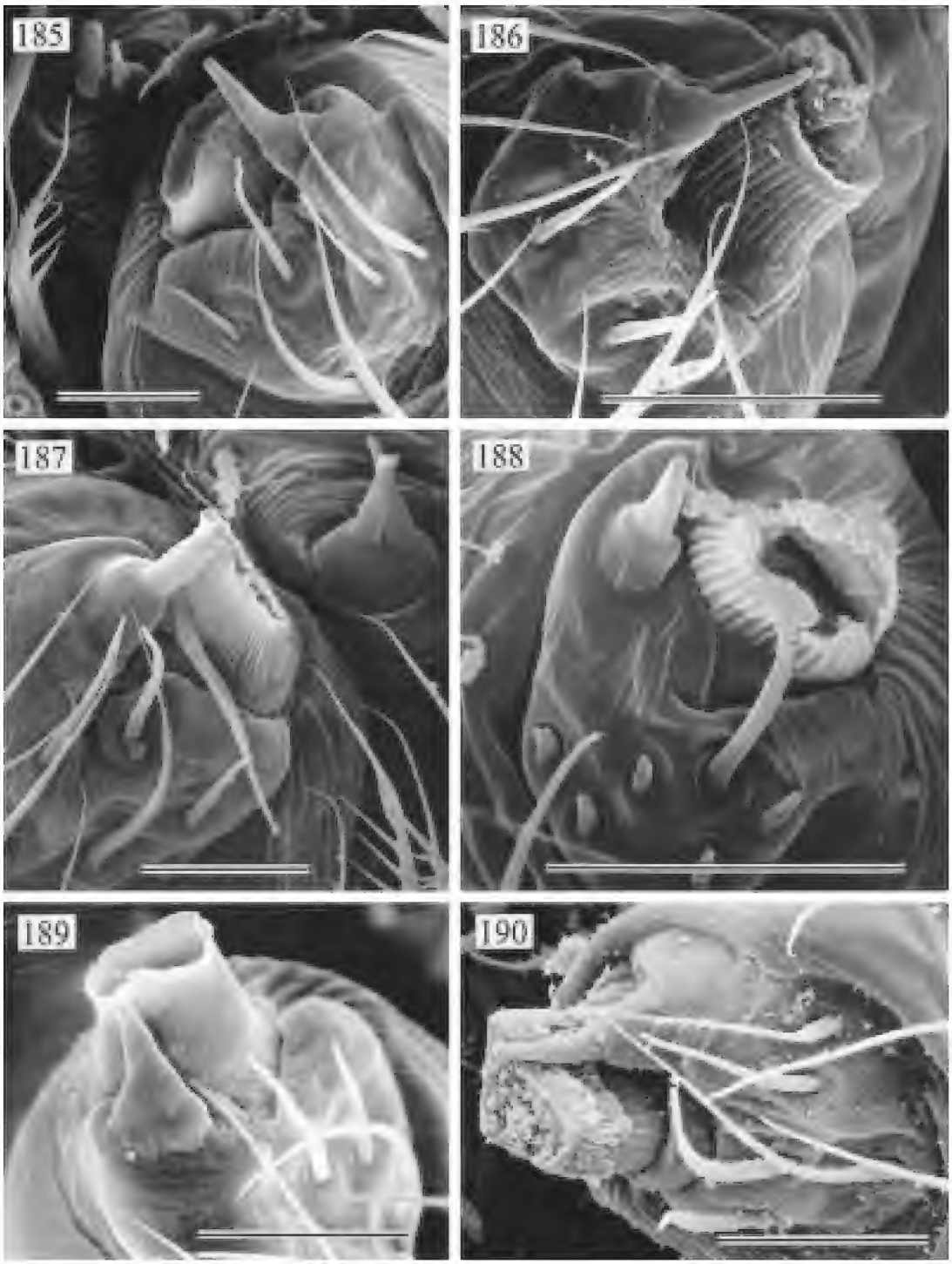
Description

Small to medium-sized, ecribellate, haplogyne spiders. Total length 1–15 mm, but usually less than 10 mm. Usually with eight or six eyes, rarely with two; cave species often blind. Eye pattern varies widely (e.g., figs. 1–11); most common and possibly plesiomorphic condition characterized by two lateral triads and median anterior pair (e.g., figs. 3–5). Six-eyed species lack AME. In some genera eyes sit on conspicuous elevations, either on median turret or on lateral eye-stalks (figs. 7–9). Carapace about as wide as long, either without median indentation, or with median groove, or with median circular depression (pit); in some species male prosoma conspicuously inflated posteriorly (e.g., figs. 1024, 1060, 1069). Clypeus ranging from almost vertical to almost horizontal, sometimes sexually modified in male (e.g., figs. 2, 273, 1213). These modifications may be ultrastructurally complex (fig. 107). Sternum about as wide as long, or wider than long, sometimes with anterior bulges in male (e.g., figs. 318, 450, 1104). Labium fused to sternum.

Opisthosoma extremely variable in shape, from higher-than-long to long-cylindrical; spherical, triangular (in lateral view), rectangular, or bifid (in dorsal view). With one pair of book-lungs. Tracheal system rudimentary or absent. Male gonopore usually with either four epiandrous spigots (figs. 113–118, 120–129) or without (figs 130–141), rarely with two (fig. 119) or up to six (e.g., in *Crossopriza lyoni*; see Huber et al., 1999). Female external genitalia with or without sclerotized plate ("epigynum"). This plate is often complex, with pockets, grooves, apophyses, etc. Internally, uterus externus usually provided with pair of dorsal pore plates (rarely absent, or fused into single pore plate or dissolved into pore field), and valve of varying complexity marking entrance to uterus internus (Huber, 1998d). Membranous sacs originating from uterus externus close to valve are common (usually single median sac, rarely lateral pair), but their function is unknown. Three pairs of spinnerets present (figs. 142–145), apparently no sexual dimorphism concerning external morphology: ALS always equipped with enlarged and widened spigot and smaller, pointed spigot next to it. (For current terminology see Platnick et al., 1991.) In addition to this basic set, some large taxa characterized by presence of about five to seven roughly cylindrical spigots (figs. 146–169), here called piriform gland spigots in accordance with Platnick et al. (1991). Other taxa have only basic set of two spigots (figs. 170–190). Posterior median spinnerets equipped with one pair of spigots in all species studied (figs. 191–199), posterior lateral spinnerets lack spigots. Various types of stridulatory organs exist that involve parts of prosoma and opisthosoma (the term stridulation may actually be inappropriate in some or all of these cases), present only in females: paired and unpaired dorsal protrusions of carapace acting against modified fields on opisthosoma [e.g., *Physocyclus* spp. (Huber, 1998e); *Crossopriza lyoni* (Huber et al., 1999); "*Coryssocnemis*" *viridescens* (Huber, 1998a); *Anopsicus* spp. (Gertsch, 1982); *Aymaria* spp.; see p. 155]; in one case, median grate on sternum acting against transverse row of cuspules on opisthosoma (fig. 1114).

Chelicerae fused at basis, with lamina (never teeth) opposing cheliceral fang. Basal segment almost always sexually modified in male, with modifications ranging from variously shaped hairs (figs. 12–15, 18–24) and simple sclerotized cones to extravagantly shaped apophyses and depressions; rarely also fangs modified in male (figs. 30–32, 620, 631). Stridulatory files (figs. 36, 38, 40) common, but in New World restricted to some ninetine genera, to *Physocyclus*, and very few species of *Metagonia*. Stridulatory pick apparently always one or more modified hairs proximally on palpal femur (figs. 37, 39, 41). Same type of stridulation also common in females.

Male palp with sexual modifications involving most or all segments. Coxa often with retrolateral apophysis (e.g., figs. 583, 1096, 1075). Prolateral (inner) side of coxa may be quite complex (figs. 111–112), but has not been studied comparatively. Trochanter sometimes with long ventral apophysis (e.g., fig. 299) that may be equipped distally



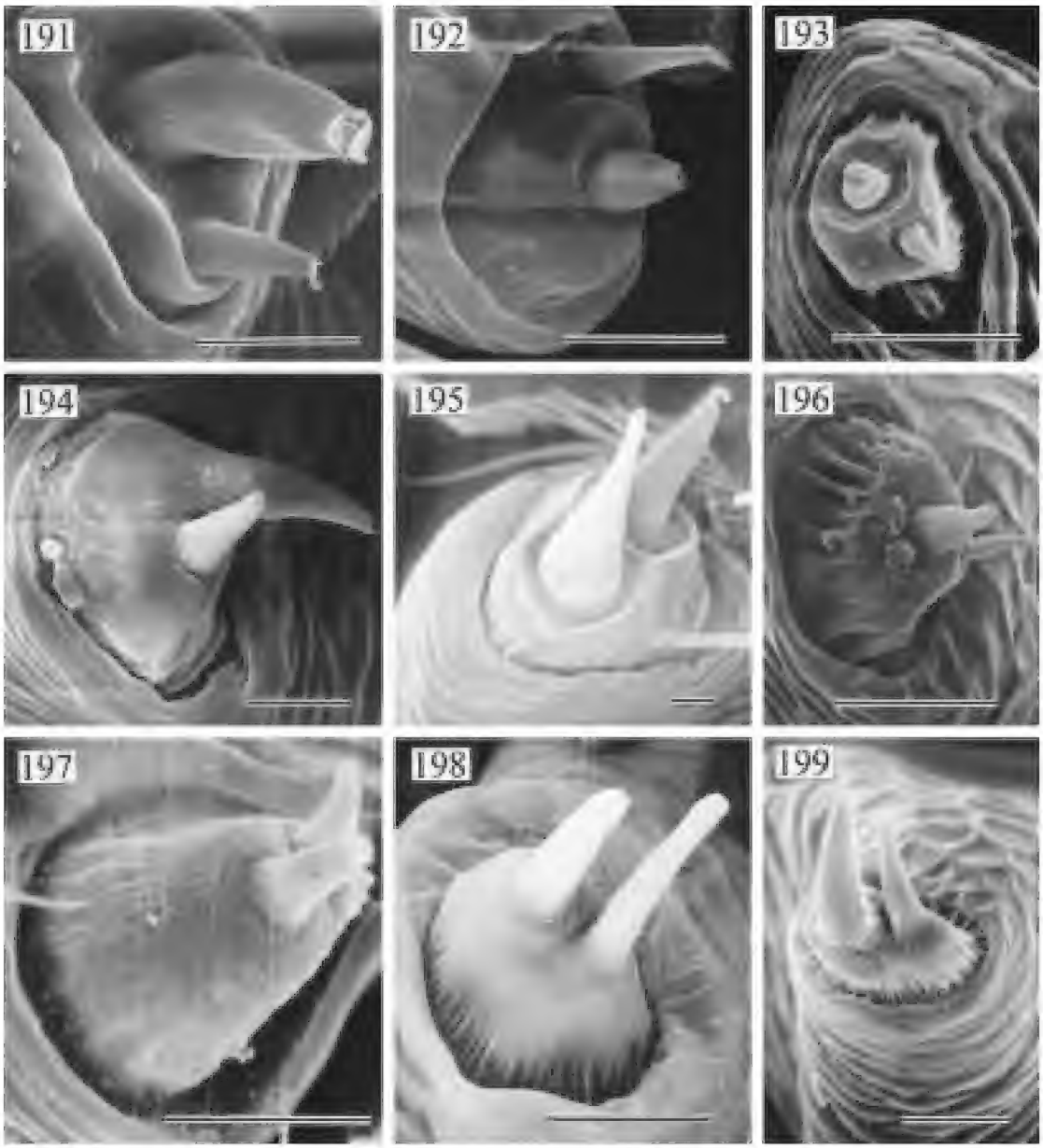
Figs. 185–190. Anterior lateral spinnerets. **185**. *Psilochorus pullulus* (Hentz). **186**. *Anopsicus zeteki* (Gertsch), female. **187**. "*Coryssocnemis*" *viridescens* Kraus, male. **188**. *Modisimus culicinus* (Simon), male. **189**. *Chibchea ika*, n. gen., n. sp., male. **190**. *Chibchea picunche*, n. gen., n. sp., female. Scale lines: 20 μm.

with strange modified hair (figs. 105–106), or with fingerlike protrusion (e.g., figs. 658, 688). Femur very variable in shape, from cylindrical to globose, often widened distally; with one or more apophyses of various shapes, usually proximally on retrolateral side and ventrally. Patella cylindrical, or reduced ventrally, or (in single monotypic genus) completely absent (figs. 390–392). Tibia cylindrical, spindle-shaped, or globose, always with two trichobothria (dorsally and retrolaterally). Cymbium with usually large paracymbium (procursus); procursus usually as long as or longer than femur, often quite complex; in some genera provided with filiform projections (figs. 48–51); in only one genus reduced to simple short lobe (figs. 466, 475). Ultrastructural complexity little studied, but evidently common (e.g., figs. 42–47). Tarsal organ either exposed (figs. 79–95) or capsulate (figs. 61–78), with variable relative width of opening, or (in *Priscula* only) sitting on stalk (fig. 96). Bulb usually attached to prolateral side of cymbium (rarely to dorsal side), either with membranous tubular embolus or without embolus. In latter case, sperm duct opens at or near basis of some bulbal apophysis, or travels variable distance into "embolar division," a projection of bulb very unlike "real" (narrow and cylindrical) embolus (e.g., figs. 52, 54–55). Sclerotized bulbal apophyses present in some taxa. Ultrastructural complexity common (e.g., figs. 52–60), but little studied.

Legs of variable relative length (male leg 1 about 2–25 × body length), but usually relatively long. "Robustness" of legs, as measured by ratio of male tibia 1 length/diameter equally variable (range ~ 8–120), with values of 40–100 most commonly found. Females always have shorter and more slender legs. Male femora 2 and 3 sometimes comparatively thicker than others. Leg formula most commonly 1243, but in short-legged taxa usually 4123, sometimes 1423. Spines (macrotrichia: figs. 110, 823, 910) and long, backward-curved hairs may be present on femora, tibiae, and metatarsi, but spines rare in females. Short hairs in roughly vertical position always present in low numbers on most segments in both sexes, especially distally, but in males of some taxa such hairs occur in very high densities (cf. figs. 108–109), either on femur or on tibia, rarely on both. Trichobothria present on tibiae (almost always three; rarely some specimens have one or more tibiae with only two), and metatarsi (always one). Dorsal and prolateral trichobothria on tibiae always situated quite proximally, while position of retrolateral trichobothrium varies widely. Its position expressed as percentage of tibia length ranges from ~ 1–70%, with very little intraspecific variation. Trochanter provided retrolaterally with cuneal notch (Roth, 1964) in all species seen by author. Tarsi always pseudosegmented, with ~ 5 to over 40 pseudosegments, usually distinct distally but difficult to count proximally. In soma taxa pseudosegmentation hardly visible in light microscopy, and SEM reveals secondary fragmentation into smaller sclerites (figs. 97–101). Tarsal organs on legs not different from those on palps in few species checked. All tarsi with three claws (figs. 102–104).

Natural History

Pholcids are probably among the commonest web-builders in the Neotropics, as suggested by the few scattered studies that provide data relevant to this question (see Introduction). They are found from sea level to over 3500 m in the Andes (e.g., *Chibchea abiseo*, n. gen., n. sp.), with high diversity apparently not restricted to the lower elevations. They are found in most life zones, from rain forests to deserts (e.g., Chile: Atacama Desert), though it is, of course, the zones of highest general biodiversity that house the greatest abundance of pholcid species. Finally, with respect to the microhabitat, pholcids are found in almost all habitats feasible for spiders, from the leaf litter and undersides of stones up to the tree canopies. Here the area of highest diversity suspiciously coincides with the level most easily accessible to humans, i.e., the shady areas near the ground and between buttresses, and the low vegetation. In some areas there is evidence that pholcids are not just well represented, but are the dominant spider group: 62% of spiders collected from bark in a Peruvian forest were pholcids (Manhart, 1994). At the same time, pholcids are among the spiders most consistently found in caves, and



Figs. 191–199. Posterior median spinnerets. **191**. *Smeringopus pallidus* (Blackwall), female. **192**. *Uthina* sp. from Sumatra, female. **193**. *Spermophora senoculata* (Dugès), male. **194**. *Mesabolivar eberhardi*, n. sp., female. **195**. *Artema atlanta* Walckenaer, male. **196**. *Metagonia blanda* Gertsch, male. **197**. *Chibchea ika*, n. gen., n. sp., male. **198**. *Modisimus guatuso* Huber, male. **199**. *Waunana modesta* (Banks), male. Scale lines: 8 μm.

several species of various genera are independently preadapted to live and spread with humans, as is evidenced by the numerous synanthropic species from various genera worldwide.

Most species seem to build webs, but in some cave- and ground-living pholcids the web is reduced to a flimsy sheet, and the spiders can quickly run over unspun surfaces. Web structure varies from three-dimensional

irregular networks (Kirchner, 1986, on *Pholcus phalangioides*) to more organized domed sheets with a tangle of lines above the sheet (Wiehle, 1933 on *Holocnemus hispanicus*; Eberhard, 1992a, 1992b; Eberhard and Briceño, 1985, on New World species), which in rare cases may lead into a tubular retreat, analogous to for example, agelenids [Huber, 1998b, on *"Coryssocnemis"* (now *Ixchela*) *furcula*]. Some taxa are adapted to live on the undersides of leaves; here again, the web is reduced or absent. In the same way that many pholcids do not live up to their English vernacular name ("daddy longlegs"), many do injustice to their German name too (*Zitterspinnen*, i.e., "shaking spiders"): instead of vibrating or swinging at a perceived danger, many short-legged species swiftly run away, while some leaf-dwellers prefer to press their bodies closely against the leaf.

While Old World species have been studied for a long time with respect to their sexual biology (Montgomery, 1903; Gerhardt, 1921, 1923, 1924, 1927, 1929; Huber, 1995; Uhl et al., 1995), there have only recently been accumulated some data on the sexual biology of New World pholcids, mainly of Central American genera (Eberhard and Briceño, 1983, 1985; Huber, 1994, 1997c, 1997d, 1998a, 1998c; Huber and Eberhard, 1997). The scarce information available on South American species is detailed in the species descriptions below (*Mesabolivar eberhardi*, p. 201: *Litoporus lopez*, p. 299).

Composition

At the final revision of the manuscript (February 2000) I counted 720 extant nominal species in 63 extant genera worldwide (the monotypic genus *Serratochorus* Wunderlich and eight further species from two extant genera are only known from Dominican amber). In the New World, 457 extant species in 47 extant genera are described. Of these 47 genera, six are only represented by a single introduced species each (*Artema*, *Micropholcus*, *Crossopriza*, *Holocnemus*, *Smeringopus*, *Spermophora*); two are represented by several native species, but are clearly also Old World genera (*Pholcus*, *Leptopholcus*). This leaves a total of 39 endemic New World genera (see also appendix 4).

Key to the Extant Genera of the New World

This key only works if both males and females are available. In some genera only males are necessary. Throughout, a dissecting microscope is sufficient, though some couplets (e.g., 5, 9) require high magnifications. It is obvious that at the present state of knowledge a key to genera can only be preliminary, and will have to be emended as new species (and probably genera) become known. *Stenosfemuraia* González-Sponga is not included because I have not seen this genus.

1. North and Central America, including Panama and Lesser Antilles, but without Trinidad and Tobago, and without Netherlands Antilles 2
– South America, including Netherlands Antilles, Trinidad and Tobago, and Galápagos Islands 23

2(1). Six eyes or fewer 3
– Eight eyes 7

3(2). Six eyes on median eye turret (fig. 9) .. .. *Modisimus*
– Six or fewer eyes not on elevated ocular area 4

4(3). Procursus with ventral hinged process (figs. 208, 213, 276) .... *Metagonia*
– Procursus without ventral hinged process 5

5(4). Male chelicera proximolaterally without apophysis; palpal femur ventrodistally with apophysis ..... *Anopsicus*
– Male chelicerae proximolaterally with apophysis; palpal femur without ventrodistal apophysis 6

6(5). Opisthosoma globular; synanthropic ..... *Spermophora (senoculata)*
– Opisthosoma long, cylindrical; only on Antilles ..... *Leptopholcus*

7(2). Male palpal femur ventrodistally with apophysis (figs. 564, 1086, 1110) .. 8
– Male palpal femur ventrodistally without apophysis 12

8(7). Male and female femora with several rows of spines; only on Hispaniola .. .. *Tainonia*
– Male and female femora without or with only one (ventral) row of spines in males 9

9(8). Male femora with many short vertical hairs (figs. 108–109) 10
– Male femora without or very few short vertical hairs 11

10(9). Ocular area low; male tibiae with many short vertical hairs ..... *Waunana*
– Ocular area high; male tibiae without or very few short vertical hairs ..... *Modisimus*
11(9). Opisthosoma globular; Mexico and USA ..... *Psilochorus*
– Opisthosoma longer than high; Lesser Antilles ..... *Mecoloesthus*
12(7). Opisthosoma globular or higher than long 13
– Opisthosoma longer than high 19
13(12). Male chelicerae with several to many cone-shaped, black projections ... 14
– Male chelicerae with none to two pairs of cone-shaped black projections, or with longer apophyses 15
14(13). Conical projections on male chelicerae are apophyses; male chelicerae usually (always?) with stridulatory ridges (fig. 578) ..... *Physocyclus*
– Conical projections on male chelicerae are modified hairs (figs. 12–13); male chelicerae without stridulatory ridges; synanthropic ..... *Artema (atlanta)*
15(13). Large spiders (> 5 mm body length), with characteristic prolateroventral protrusion on genital bulb (see fig. 43 in Huber 1998b) ..... *Ixchela*
– Small spiders (< 3 mm body length) 16
16(15). Male chelicerae proximolaterally with apophyses; procursus dorsally with movable process; synanthropic ..... *Micropholcus (fauroti)*
– Male chelicerae proximolaterally without apophysis; procursus dorsally without movable process 17
17(16). Carapace without groove; male sternum without anterior humps; procursus voluminous (figs. 483, 490) ... *Chisosa*
– Carapace with shallow but distinct median groove; male sternum with anterior humps; procursus simple 18
18(17). Male chelicerae with stridulatory ridges and one pair of large frontal apophyses proximally ..... *Pholcophora*
– Male chelicerae without stridulatory ridges; with one pair of small frontal apophyses distally ..... *Tolteca*
19(12). Carapace with roundish indentation (pit); male chelicerae without proximolateral apophysis; synanthropic, introduced Old World species 20
– Carapace without indentation; male chelicerae with proximolateral apophysis 22
20(19). Opisthosoma pointed posterodorsally; two pairs of frontal apophyses on male chelicerae ..... *Crossopriza (lyoni)*
– Opisthosoma rounded posterodorsally; male chelicerae with one pair of frontal apophyses 21
21(20). Male femur with spines ventrally; male and female chelicerae with stridulatory ridges; female palp distally enlarged ..... *Holocnemus (pluchei)*
– Male femur without spines ventrally; male and female chelicerae without stridulatory ridges; female palp not enlarged ..... *Smeringopus (pallidus)*
22(19). Only Antilles; pale ..... *Leptopholcus*
– Only eastern USA; outside this area, only the dark-patterned, synanthropic *P. phalangioides* ..... *Pholcus*
23(1). Male chelicerae with single, medially fused apophysis (fig. 358) ..... *Ibotyporanga (naideae)*
– Male chelicerae otherwise 24
24(23). Procursus reduced to simple lobe (figs. 466, 475); only on Netherlands Antilles ..... *Papiamenta*
– Procursus well developed 25
25(24). Procursus extremely long, bandlike (figs. 1096–1097) ..... *Kaliana*
– Procursus otherwise 26
26(25). Carapace without thoracic groove or pit 27
– Carapace with thoracic groove or pit 35
27(26). Male chelicerae with proximolateral apophysis (only synanthropic Old World species) 28
– Male chelicerae without proximolateral apophysis 29
28(27). Small spider (~ 2 mm body length) with globular opisthosoma ..... *Micropholcus (fauroti)*
– Large spider (over 5 mm body length) with long opisthosoma ..... *Pholcus (phalangioides)*
29(27). Six eyes; long legs; procursus usually with ventral hinged process (e.g., figs. 208, 213, 276) ..... *Metagonia*
– Eight eyes; short legs; procursus without ventral hinged process 30
30(29). Male palp without patella (figs. 390–392) ..... *Enetea*
– Male palp with patella 31
31(30). Proximal segment of male chelicera unmodified; male fang with apophysis (fig. 384); only on Galápagos Islands ..... *Galapa*
– Proximal segment of male chelicera with one or more apophyses; male fang

without apophysis; not on Galápagos Islands 32

32(31). Procursus only half as long as bulb (fig. 339) ..... *Kambiwa*

– Procursus as long as bulb 33

33(32). Male chelicerae with several (2–4) pairs of tiny cones frontally (figs. 400, 415); procursus simple ..... *Aucana*

– Male chelicerae with one pair of frontal apophyses 34

34(33). Cheliceral apophyses long, projecting forward (fig. 372); procursus with dorsal flap (figs. 374, 378, 380) ..... *Guaranita*

– Cheliceral apophyses short, projecting downward (fig. 333); procursus without dorsal flap ..... *Nerudia*

35(26). Procursus wrapped around embolar division of bulb (fig. 1260) ..... *Teuia*

– Procursus not wrapped around embolar division of bulb 36

36(35). Legs short (leg 1 < 4.5 × body length) 37

– Legs longer (leg 1 > 4.5 × body length; shorter only in some *Chibchea* species) 38

37(36). Eight eyes; procursus long, S-shaped band, without hinged process (figs. 346, 353) ..... *Gertschiola*

– Six eyes; procursus shorter, with hinged process (fig. 286) ..... *Metagonia (globulosa)*

38(36). Carapace with thoracic pit 39

– Carapace with thoracic groove 43

39(38). Male chelicerae with several to many cone-shaped, black projections (only introduced, synanthropic species) 40

– Male chelicerae with one to two pairs of apophyses 41

40(39). Conical projections on male chelicerae are apophyses; male chelicerae with stridulatory ridges; female carapace with cone posteriorly ..... *Physocyclus (globosus)*

– Conical projections on male chelicerae are modified hairs; male chelicerae without stridulatory ridges; female carapace without cone posteriorly ..... *Artema (atlanta)*

41(39). Male palpal coxa with retrolateral apophysis (fig. 583); cheliceral apophyses without imbedded modified hairs ..... *Aymaria*

– Male palpal coxa without retrolateral apophysis; cheliceral apophyses with imbedded modified hairs (figs. 14–15); introduced, synanthropic Old World species 42

42(41). Opisthosoma pointed posterodorsally; two pairs of frontal apophyses on male chelicerae; male femur with spines ventrally; male and female chelicerae with stridulatory ridges ..... *Crossopriza (lyoni)*

– Opisthosoma rounded posterodorsally; male chelicerae with single pair of frontal apophyses; male femur without spines ventrally; male and female chelicerae without stridulatory ridges ... *Smeringopus (pallidus)*

43(38). Large pholcid (body length > 3.5 mm) with high opisthosoma .... *Priscula*

– Usually small; if large, then opisthosoma longer than high 44

44(43). Male chelicerae frontally with black pectinate apophysis (fig. 1232) ..... *Otavaloa*

– Male chelicerae frontally with several (~ 5–50) cone-shaped or globular hairs (figs. 18–20, 947, 967) ... *Carapoia*

– Male chelicerae otherwise 45

45(44). Male palpal patella ventrally as long, or almost as long as wide (figs. 1266, 1300, 1304) ..... *Tupigea*

– Male palpal patella ventrally very short 46

46(45). Male femur 1 > 1.15 × tibia 1; legs extremely long and thin .... *Litoporus*

– Male femur 1 about as long as tibia 1 47

47(46). Procursus lying in groove of bulb; male chelicerae with pair of club-shaped hairs on each side (fig. 29 in Huber, 1997b) ..... *Systenita*

– Procursus not lying in groove of bulb; male chelicerae different 48

48(47). Male palpal tibia globular (figs. 1338, 1349) ..... *Blancoa*

– Male palpal tibia longer than wide .. 49

49(48). Epigynum with median groove or pocket (e.g., figs. 746, 808, 892) ..... *Mesabolivar*

– Epigynum without median groove or pocket 50

50(49). Male prosoma inflated posteriorly ... . *Mecoloesthus*

– Male prosoma not inflated posteriorly 51

51(50). Male cheliceral fang with apophysis (figs. 620, 631, 666, 681) ..... *Chibchea*

– Male cheliceral fang unmodified ... 52

52(51). Male femora of legs with many short vertical hairs; only western Colombia and Ecuador 53

– Male femora of legs without or with very few short vertical hairs 54

53(52). Six eyes on high eye turret; male tibiae of legs without or with very few short vertical hairs ..... *Modisimus*

– Eight eyes on moderately elevated ocular area; male tibiae of legs with many short vertical hairs ..... *Waunana*

54(52). Male chelicera with articulated apophysis (figs. 16, 1140, 1148, 1155); procursus very long, overreaching palpal coxa ..... *Pisaboa*

– Male chelicera without articulated apophysis; procursus not reaching palpal coxa 55

55(54). Six eyes; chelicerae with short entapophyses (figs. 1321, 1330) .. *Canaima*

– Eight eyes; chelicerae with long entapophyses 56

56(55). Male chelicerae with only one pair of apophyses ..... *Chibchea*

– Male chelicerae with three to several cone-shaped apophyses (figs. 987, 997, 1001, 1005) ..... *Coryssocnemis*

METAGONIA SIMON, 1893

Metagonia Simon, 1893b: 472 (type species by original designation *M. bifida* Simon, 1893; examined). – Gertsch, 1971: 82–83; 1977: 105; 1986: 40–41. – Gertsch and Peck, 1992: 1194–1195. – Huber, 1997a: 342.

Anomalaia González-Sponga, 1998: 24 (type species by original designation *A. mariguitarensis* González-Sponga, 1998; examined). NEW SYNONYMY.

JUSTIFICATION OF SYNONYMY: The type species of *Anomalaia* shares with "typical" *Metagonia* species (i.e., southeast Brazilian species herein considered closely related to the type species, which is only known from the female) the asymmetrical female internal genitalia, the hinged process on the procursus, and the dorsal attachment of the bulb to the cymbium.

DIAGNOSIS: Small to medium-sized (total length usually ~ 1.5–3 mm), usually pale, long-legged leaf- and cave-dwellers, AME always missing. Easily distinguished from other New World genera by the simple, often dorsally attached bulb consisting of a globular part and a tubular embolus ending in a spine, by the male clypeus that is usually sexually modified, by the complex procursus that is usually provided with a ventral hinged process, and by the vulva that is usually provided with a complex system of sclerotized ducts. Distinguished from the putative sister group (Old World *Pholcus* group sensu Huber, 1995) by the ventral hinged process of the procursus, and by the absence of any bulbal projection other than the embolus.

DESCRIPTION: Total length usually ~ 1.5–3 mm, rarely up to 5 mm (e.g., *M. caudata* O. Pickard-Cambridge). Carapace roundish, ocular area barely elevated (figs. 1–2); ochre-yellow, sometimes with distinct brown pattern (figs. 201, 210, 282); thoracic groove usually absent (present in *M. globulosa*, n. sp.; fig. 280). Six eyes in two triads, absent in some troglobites, AME always missing. Distance PME-ALE small (~ 15–25% of PME diameter). Male clypeus usually with sexual modifications, usually species-specific. Male chelicerae usually with modified hairs (figs. 28–29), sometimes with one or more pairs of frontal apophyses, rarely with lateral stridulatory ridges (figs. 40, 273, 285). Male palps large in relation to overall size; coxa without retrolateral apophysis, femur sometimes with conspicuous ventral or prolateroventral apophysis (e.g., fig. 246), procursus usually complex, with ventral hinged process (figs. 208, 213, 258, 276); bulb often attached dorsally to cymbium, with tubular embolus ending in spine (fig. 53), without further projections. Tarsal organ capsulate in all species examined (*M. argentinensis* Mello-Leitão, *rica* Gertsch, *blanda* Gertsch, *tinaja* Gertsch, *delicata* (O. Pickard-Cambridge), *uvita* Huber, *globulosa*, n. sp., *maldonado*, n. sp.; figs. 61–66). Legs usually thin and long (leg 1 usually ~ 8–13 × body length; in *M. globulosa* only 4.4 × body length; tibia 1 l/d: 50–100; in *M. globulosa* only 26), leg 1 always longest, legs 2 and 4 about same length, leg 3 shortest; often with darker patellae and tibia-metatarsus joints, sometimes with up to three dark rings on femora and tibiae; without spines, vertical and curved hairs; retrolateral trichobothrium of tibia 1 at ~ 7–15%, more distally only in *M. globulosa* (21–23%); tarsus 1 with ~ 20–30 pseudosegments that are distinct distally, but difficult to count proximally. Opisthosoma very variable in shape, from globular to cylindrical to bifid, often overhanging spinnerets (e.g., figs. 203, 249, 279); grayish-ochre, often with darker spots, whose num-

ber varies widely even within species. Male gonopore with four epiandrous spigots in all species examined (*M. argentinensis*, *rica*, *blanda*, *delicata*, *uvita*, *maldonado*; figs. 113–118). ALS usually with several (5–6) piriform gland spigots (examined: *M. argentinensis*, *rica*, *blanda*, *globulosa*, *maldonado*; figs. 146–150), with only one piriform gland spigot each in *M. delicata* and *uvita* (fig. 175); other spinnerets typical for family.

Sexual dimorphism slight, females with shorter legs, unmodified clypeus and chelicerae, with greater variation in opisthosoma size and shape. Epigynum ranging from extremely inconspicuous (same pale color as opisthosoma) to dark-brown rugose plates (e.g., figs. 223, 270); internally with dorsal pore plates in various configurations (e.g., figs. 216, 224, 248); uterus externus often with complex system of sclerotized ducts ventrally (figs. 218, 225, 255, 262, 278, 290; receptacles?), often asymmetric.

MONOPHYLY: All species included share the globular bulb with tubular embolus ending in a spine, with no other projection; most species share the ventral hinged process on the male procursus, the dorsal attachment of the bulb to the cymbium, and a complex system of sclerotized ducts in the female internal genitalia. See Specific Relationships, group 3 below, for species that lack these characters; they are nevertheless assigned to the genus for their striking general similarity.

GENERIC RELATIONSHIPS: The genus is apparently more closely related to some Old World genera (the *Pholcus* group sensu Huber, 1995), than to other New World genera (tubular membranous embolus, globular hairs on male chelicerae with deep parallel grooves). Several other similarities to Old World genera, however, like small PME-ALE distance, capsulate tarsal organ, absence of palpal coxal apophysis and thoracic groove, and presence of ALS piriform gland spigots and epiandrous spigots, seem to be plesiomorphies.

SPECIFIC RELATIONSHIPS: The genus can be tentatively divided into five operational species groups, at least some of which are possibly monophyletic: (1) The group including the type species, most diverse in southern Brazil, but apparently ranging from central Argentina to Ecuador; with two possible synapomorphies: bifid opisthosoma and sclerotized dark epigynum; including: *M. argentinensis*, *bicornis* (Keyserling), *bifida* Simon, ?*duodecimpunctata* Schmidt, ?*flavipes* Schmidt, *heraldica* Mello-Leitão, *quadrifasciata* Mello-Leitão, *strinatii* (Brignoli) (see Remark below), and the new species *nadleri*, n. sp., *bonaldoa*, n. sp. (2) The group previously assigned to *Micromerys* (transferred by Huber, 1997a), ranging from Mexico to southern Brazil; often with cylindrical opisthosoma, usually very small (total length ~ 2 mm), male clypeus not or only slightly modified, with frontal cheliceral apophyses as possible synapomorphy; including: *M. delicata*, *uvita*, *talamanca* Huber, ?*unicolor* (Keyserling), *mariguitarensis* González-Sponga, and the newly described *M. beni*, n. sp.; I have seen further undescribed material from Brazil, Ecuador, Bolivia, Colombia, and Guyana. (3) A group represented in this paper by four newly described species (*M. tingo*, n. sp.; *taruma*, n. sp.; *samiria*, n. sp.; *maldonado*, n. sp.), ranging from Bolivia and Peru to Guyana (map 1) (possibly including *M. auberti* Caporiacco from French Guiana); with complex procursus that lacks a hinged process, without sclerotized ducts in the female internal genitalia, with prolaterally attached bulb. All these characters are plesiomorphies, and the group is possibly a paraphyletic assemblage of primitive species. However, the reduction of globular hairs on the male chelicerae may constitute a synapomorphy of this group. (4) The group including all Central American species and the four known island species (see Distribution below), ranging from Mexico to northern Brazil; very similar to group 1, but opisthosoma not bifid, epigynum not sclerotized, male palpal femur without ventral apophysis; including the 45 Central American species in Gertsch (1986), plus *M. lancetilla* Huber, *reventazona* Huber, *toro* Huber, *hondura* Huber, *hitoy* Huber, *asintal* Huber, *bellavista* Gertsch and Peck, *reederi* Gertsch and Peck, *debrasi* Pérez González and Huber, and possibly *lingua* (Schmidt) and *conica* (Simon). I have seen further undescribed material from Colombia and Brazil (Manaus). This group is possibly not monophyletic. (5) A group so far only represented by the newly described *M. furcata*, n. sp., from southeastern Brazil and the very aberrant *M. globu-*

losa from Peru and Bolivia (the AMNH has females from Trinidad that appear closely related to *M. globulosa*!), with globular opisthosoma and relatively short legs. This group is possibly close to, or nested within group 2 (*M. furcata* has cheliceral apophyses!).

REMARK: In the original description of *Metagonia strinatii* (Brignoli) (Brignoli, 1972a), the female internal genitalia (Brignoli's fig. 9) are simple and symmetric, while those of "*Priscula* cf. *paeta*" have asymmetrical internal sclerotized ducts (Brignoli's fig. 13). The two figures were obviously mixed up.

MISPLACED SPECIES: When New World "*Micromerys*" species were transferred to *Metagonia* (Huber, 1997a), *Micromerys occidentalis* (Mello-Leitão, 1929) was the only species not examined. I have since seen the female holotype (from Tapera, Pernambuco, Brazil; date and collector not given, in MNRJ), which is obviously a *Micropholcus fauroti* (Simon, 1887) (NEW SYNONYMY), a pantropical pholcid (Deeleman and Prinsen, 1987; Pérez González, 1995).

NATURAL HISTORY: Most species (for which these data are known) have been collected either in caves (mainly in Mexico) or from the undersides of leaves (Gertsch, 1986; Huber, 1997a). The only easy way to collect them in reasonable numbers seems to be by hand (turning over leaves, or picking them from cave walls), which may be the reason for the relatively poor representation of the genus in the collections I have seen. (Gertsch, when revising the genus, had eight specimens from four species from Costa Rica available for study, collected traditionally by sweeping of foliage; during my own work in Costa Rica I collected with little effort about 350 specimens from eight species, usually at the rate of about one specimen per minute, all by hand). Only one species (*M. rica* Gertsch) has been studied in some detail with respect to prey capture, courtship, copulation, egg sac production, and genital mechanics (Huber, 1997a).

DISTRIBUTION: From Mexico to central Argentina. The only record for the USA (Texas) is from a single individual in a banana bunch from Mexico. The genus is conspicuously absent on the Antilles, with the exception of two eyeless troglobites (*M. debrasi* on Cuba, *M. jamaica* on Jamaica). The only other island species are two more eyeless troglobites on Galápagos (*M. bellavista*, *reederi*).

COMPOSITION: The genus now includes a total of 79 nominal species. Judging from the undescribed species I have seen in the few collections studied, a comprehensive revision would probably yield at least several dozens of new species in South America.

Metagonia nadleri, new species

Figures 200–209

Metagonia sp., "I.D. #5": Huber, 1999: fig. 18.

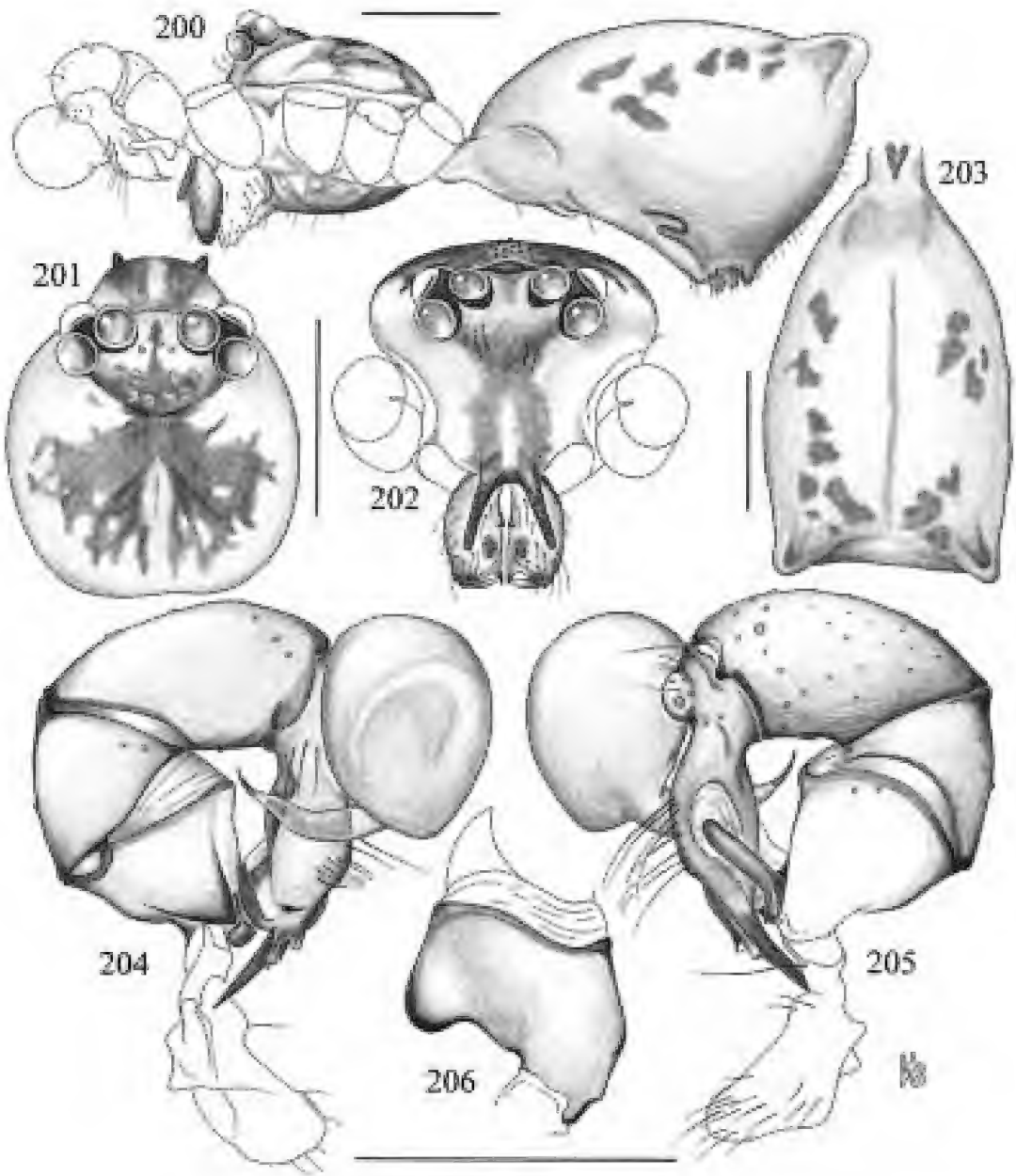
TYPE: Male holotype from Santa Teresa, Espírito Santo, Brazil; Jan. 26, 1959 (A. M. Nadler), in AMNH.

ETYMOLOGY: Named for the collector.

DIAGNOSIS: Representative of group 1 above; distinguished from close relatives (*M. bonaldoa*, *argentinensis*) by the long, diverging clypeal apophyses (figs. 202, 207), the shape of the palpal femur apophysis (figs. 204, 206), and the procursus (figs. 208–209) (see Note below).

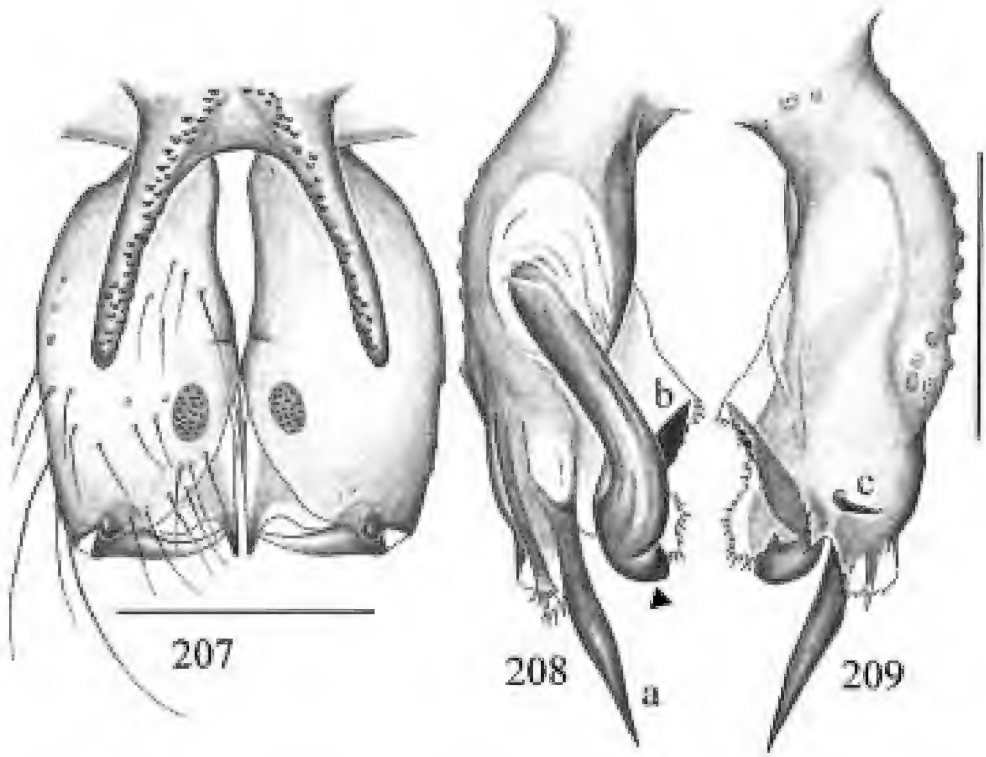
NOTE: This might be the male of the type species of *Metagonia* (*M. bifida* Simon, 1893, from Rio de Janeiro; see redescription in Huber, 1997b), as well as the male of *M. heraldica* Mello-Leitão and *M. quadrifasciata* Mello-Leitão (both from Rio de Janeiro). However, there are several (undescribed) species with very similar habitus in southeastern Brazil. More material of both sexes needs to be studied to either justify a synonymization, or support the present name as valid.

MALE (holotype): Total length 2.2, carapace width 0.75; leg 1: 23.8 (5.6+0.4 +5.7+10.8+1.3), tibia 2: 3.7, tibia 3: 2.4, tibia 4: 3.3; tibia 1 l/d: 72. Carapace ochre-yellow with distinct brown mark (fig. 201), ocular area brown, distance PME-ALE small (~ 25% of PME diameter). Clypeus with light brown marks, with pair of long, diverging brown apophyses (fig. 202); sternum light brown with many small light spots, shape as in *M. globulosa* (cf. fig. 281). Chelicerae ochre-yellow, with pair of brown plates set with tiny tubercles (fig. 207), without modified hairs. Palps ochre-yellow to light brown, coxa without retrolateral apophysis, femur without proximal retrolateral apophysis but with large sclerotized prolater-



Figs. 200–206. *Metagonia nadleri*, n. sp., male holotype. **200**. Habitus, lateral view. **201–202**. Prosoma, dorsal and frontal views. **203**. Opisthosoma, dorsal view. **204**. Left palp, prolateral view. **205**. Left palp, retrolateral view. **206**. Left palpal femur, ventral view. Scale lines: 0.5 mm.

al protrusion (figs. 204–206); procursus complex (figs. 208–209), consisting basically of main branch ending in strong spine (''a''), prolateroventral membrane, into which black sclerite seems to be suspended (''b''), prolateral black spine (''c''), and retrolateroventral hinged process (arrow); bulb consisting of simple globular part and tubular embolus ending in spine (fig. 204). Legs light ochre-yellow, patella and metatarsus basally darker; most hairs missing; tarsus 1 with ~ 25 pseudosegments. Opisthosoma bifid (fig.



Figs. 207–209. *Metagonia nadleri*, n. sp., male holotype. **207**. Chelicerae and clypeal apophyses, frontal view. **208**. Left procursus, retrolateral view. **209**. Left procursus, prolateral view (a, b, c refer to structures described in the main text; arrow points to hinged process). Scale lines: 0.2 mm.

203), gray with some large dark spots dorsally.

FEMALE: Unknown (see Note above).

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BRAZIL: *Espírito Santo*: Santa Teresa: type above.

Metagonia bonaldoa, new species

Figures 210–218

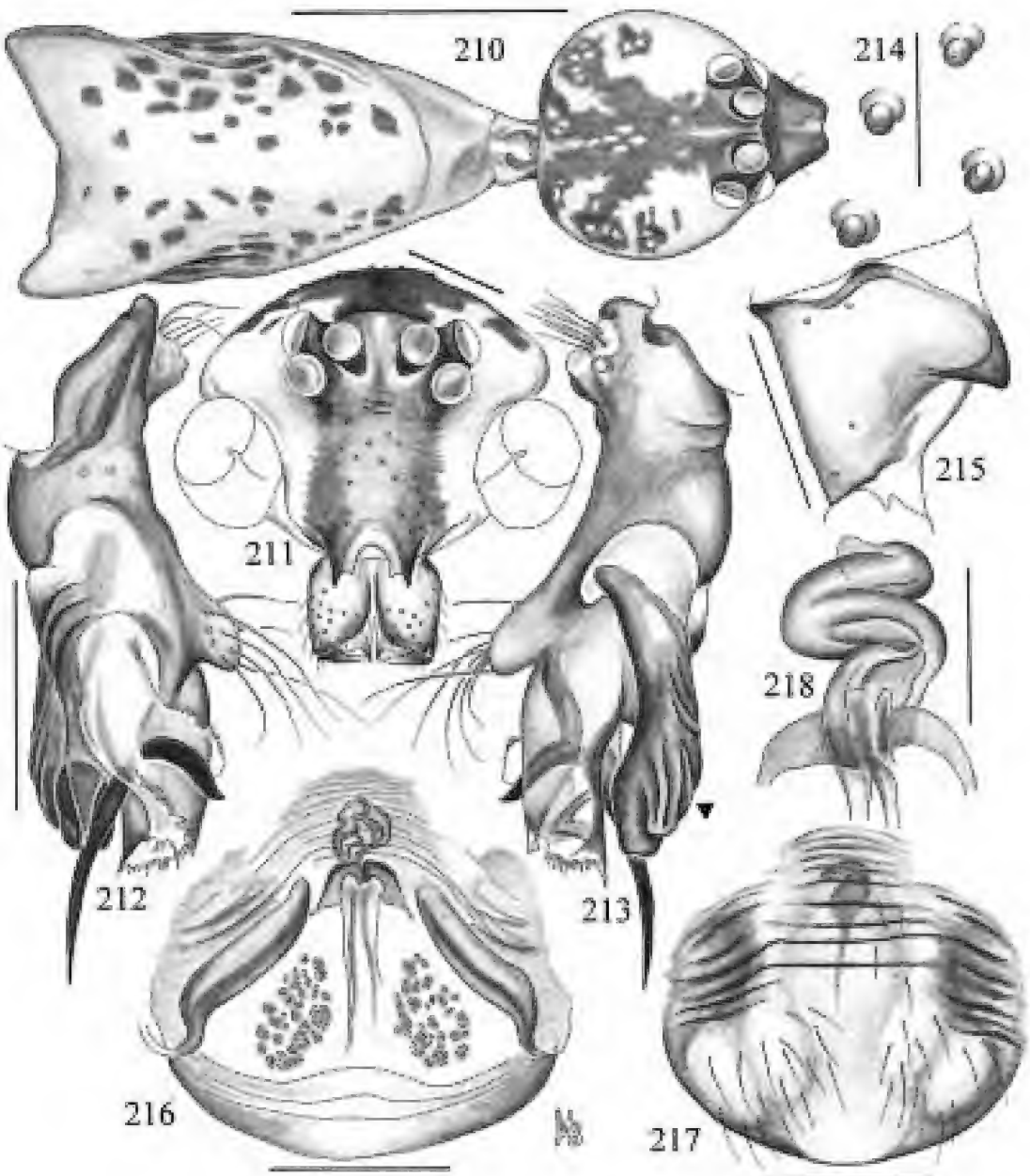
TYPES: Male holotype, 4♂ 2♀ paratypes, and one juvenile from Rancho Queimado, Santa Catarina, Brazil; Nov. 15–18, 1995 (A. Bonaldo), in MCN (26920).

ETYMOLOGY: Named for the collector of the type material.

DIAGNOSIS: Close relative of *M. argentinensis* Mello-Leitão, distinguished by the pair of bifid male clypeal apophyses (fig. 211), the shape of the procursus (figs. 212–213), and the large oval epigynum (fig. 217) (see Note below).

NOTE: This species might be conspecific with *M. heraldica* Mello-Leitão and *M. quadrifasciata* Mello-Leitão. Both are from Rio de Janeiro, in both the males are unknown, and in both the type material is possibly lost. Given the large number of similar (undescribed) species in southeastern Brazil, I consider it more probable that the species described herein is in fact new.

MALE (holotype): Total length 2.9, carapace width 0.9, length 0.9; leg 1: 25.2 (6.1+0.4+6.4+10.8+1.5), tibia 2: 3.8, tibia 3: 2.3, tibia 4: 3.2; tibia 1 l/d: 64. Habitus as in fig. 210. Carapace yellowish, with brown pattern as in fig. 210; ocular area also brown, distance PME-ALE about 20% of PME diameter. Clypeus with broad brown band, with pair of distinctive apophses (fig. 211), sternum brown with light spots at bases of coxae and light triangular mark in center. Chelicerae brown, with modified hairs as in fig. 214. Palps ochre-yellow to brown, in



Figs. 210–218. *Metagonia bonaldoa*, n. sp. **210**. Male habitus, dorsal view. **211**. Male prosoma, frontal view. **212**. Left procursus, prolateral view. **213**. Left procursus, retrolateral view (arrow points to hinged process). **214**. Four of the modified hairs on male chelicerae. **215**. Male left palpal femur, prolateral view. **216**. Epigynum, dorsal view. **217**. Epigynum, ventral view. **218**. System of sclerotized structures (duct?) in female internal genitalia, ventral view. Scale lines: 1.0 mm (210), 0.3 mm (211–213, 215–217), 0.1 mm (218), 0.05 mm (214).

general as in *M. nadleri* (cf. figs. 204–205), femur with pointed apophysis (fig. 215), procursus as in figs. 212–213. Legs yellowish, with hardly visible darker bands (cf. female), without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 12%; tarsus 1 with ~ 20 pseudosegments. Opisthosoma bifid (fig. 210), ochre, with blackish spots dorsally, genital plate rectangular, brown.

VARIATION: Tibia 1 in other male: 5.5; some males also have white spots on the opisthosoma.

FEMALE: Tibia 1 (N = 6) 4.1–4.9 ($\bar{x}$ = 4.5). In general very similar to male, but dark pattern on carapace differs: pairs of radiating stripes do not contact marginal spots, ocular area not darkened, clypeus has only pair of dark spots above chelicerae. Rings on legs usually very distinct: femora and tibiae with three rings each (central ring palest). Epigynum dark brown, with strong striation frontally and two pairs of humps posteriorly (fig. 217), internally with pair of pore fields (fig. 216), and complicated system of sclerotized ducts (figs. 216, 218).

DISTRIBUTION: Known only from Santa Catarina (Brazil).

MATERIAL EXAMINED: BRAZIL: *Santa Catarina*: Rancho Queimado: types above; same locality, Oct. 8–11, 1994 (A. B. Bonaldo & L. Moura), 3♀ in MCN (26171); Ilha de Arvoredo, Oct. 15–16, 1993 (A. A. Lise), 1♂ 2♀ in MCP (4033); Ilha João da Cunha, Porto Belo, Dec. 7, 1992 (R. G. Buss), 1♀ 1 juvenile in MCP (3128); Morr-Spitzkopf, Blumenau (27°01′S, 49°01′W), Feb. 2, 1996 (A. B. Bonaldo, A. Kury & R. Pinto-da-Rocha), 1♀ in MCN (27192); the following female is assigned tentatively (the epigynum is similar in shape, but smaller): Morro do Baú, Ilhota (26°48′S, 48°57′W), Feb. 4, 1996 (A. B. Bonaldo, A. Kury & R. Pinto-da-Rocha), 1♀ in MCN (27204).

Metagonia argentinensis Mello-Leitão, 1945

Figures 66, 113, 147, 219–224

Metagonia argentinensis Mello-Leitão, 1945: 227–228; figs. 2–3a.

TYPE: Female holotype from Puerto Iguazú, Misiones, Argentina; no date (M. von Bülow), in MLP (16.960) (not examined; see Note below).

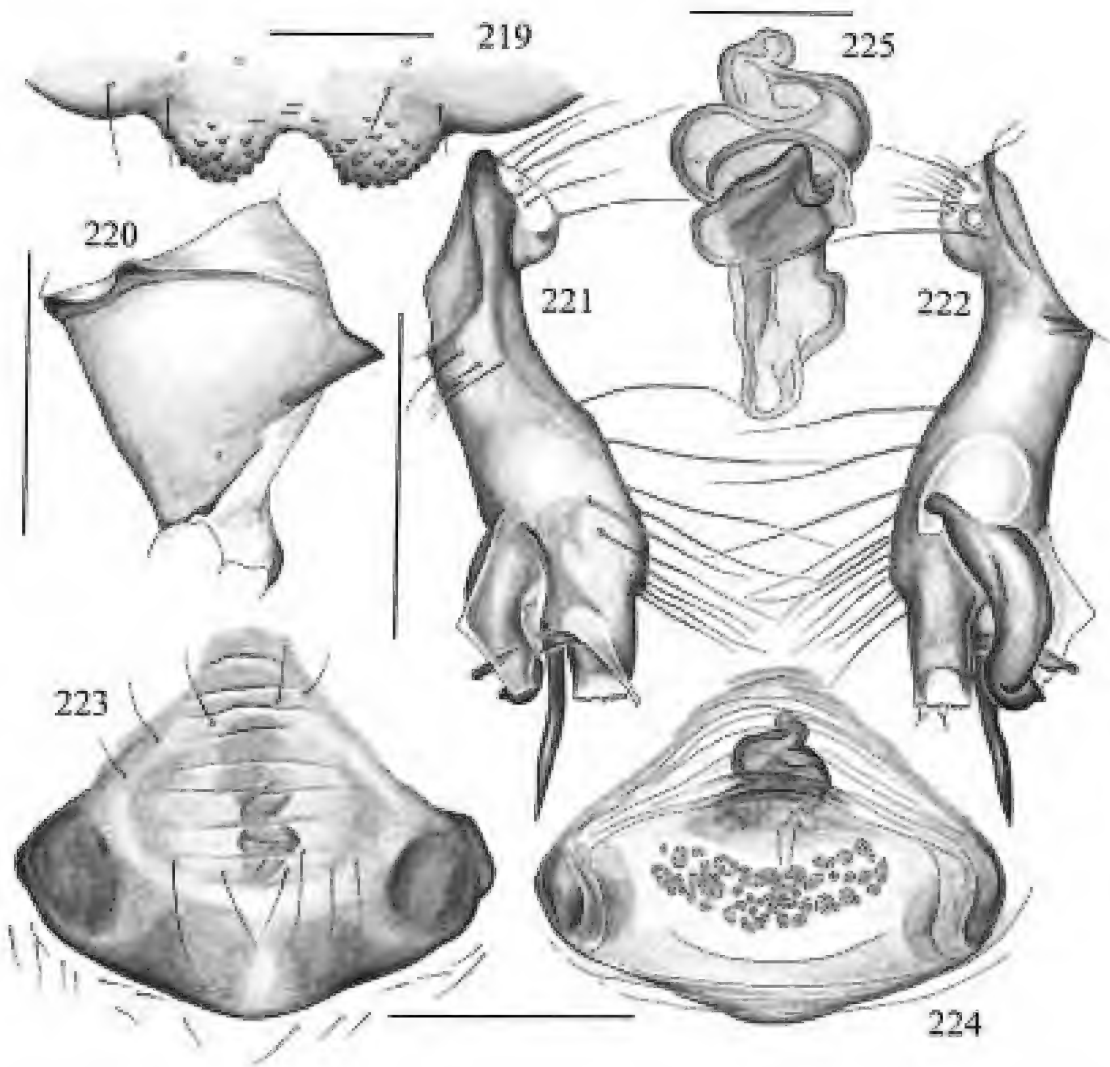
NOTE: I have not seen the type material, but consider it highly probable that the specimens described herein are conspecific with the female holotype: first, Mello-Leitão's description fits the specimens I have seen quite perfectly; second, I have seen material from the type locality; third, *M. argentinensis* has frequently been collected at various places in Rio Grande do Sul and Misiones, while the only other *Metagonia* I have seen from this region was a very different spider (close to *M. delicata*).

DIAGNOSIS: Close relative of *M. bonaldoa*, distinguished by the pair of rounded male clypeal apophyses (fig. 219), the shape of the procursus (figs. 221–222), and the triangular epigynum (fig. 223).

MALE (Morro Santana, Rio Grande do Sul): Total length 2.5, carapace width 1.1, length 0.9; leg 1: 22.5 (5.7+0.4+5.6+9.3 +1.5), tibia 2: 3.3, tibia 3: 2.1, tibia 4: 3.1; tibia 1 l/d: 52. Habitus as in *M. bonaldoa* (cf. figs. 210–211). Carapace yellowish, with two pairs of brown stripes radiating toward posterior lateral margin, and three pairs of darker spots laterally on posterior half; ocular area not darkened, distance PME-ALE about 20% of PME diameter. Clypeus with broad brown stripe, with pair of distinctive apophyses (fig. 219), sternum brown with light spots at bases of coxae. Chelicerae brown, with modified hairs as in *M. bonaldoa* (cf. fig. 214). Palps ochre-yellow to brown, in general as in *M. nadleri* (cf. figs. 204–205), femur with pointed apophysis (fig. 220), procursus as in figs. 221–222. Tarsal organ capsulate (fig. 66). Legs yellowish, with hardly visible darker rings (cf. female); without spines, without curved and vertical hairs; tarsus 1 with ~ 25 pseudosegments; retrolateral trichobothrium of tibia 1 at 13%. Opisthosoma bifid (cf. fig. 210), ochre, with blackish spots dorsally, genital plate light brown. Gonopore with four epiandrous spigots (fig. 113); ALS with several piriform gland spigots (fig. 147).

VARIATION: Tibia 1 in six males: 4.9–6.4 ($\bar{x}$ = 5.8). Males from Salto do Yucumá with brown ocular area; in some males rings on legs well visible.

FEMALE: Tibia 1 (N = 13) 4.0–4.7 ($\bar{x}$ = 4.3). In general very similar to male, but rings on legs usually much more pronounced: fem-



Figs. 219–225. *Metagonia argentinensis* Mello-Leitão. **219**. Male clypeus modification, frontal view. **220**. Male left palpal femur, prolateral view. **221**. Left procursus, prolateral view. **222**. Left procursus, retrolateral view. **223**. Epigynum, ventral view. **224**. Epigynum, dorsal view. **225**. System of sclerotized structures (duct?) in female internal genitalia, ventral view. Scale lines: 0.3 mm (220–224), 0.1 mm (219, 225).

ora and tibiae with three rings each (central ring palest). Epigynum dark brown, triangular (fig. 223), internally with large undivided pore field (fig. 224), and complicated system of sclerotized ducts (figs. 224–225).

DISTRIBUTION: Known from southern Brazil (Rio Grande do Sul, Santa Catarina, Paraná) and northeastern Argentina (Misiones).

MATERIAL EXAMINED: ARGENTINA: *Misiones*: Pto. Bemberg, Oct. 1953 (Schiapelli), 2♀ in MACN. BRAZIL: *Rio Grande do Sul*: Morro Santana, May 17, 1980 (A. A. Lise), 1♂ in MCN (9080); Barragem, Passo do Inferno, São Francisco de Paula, Nov. 19, 1997 (M.A.L. Marquez), 1♂ in MCN (28869); São Francisco de Paula, May 30–June 2, 1996 (A. A. Lise), 1♂ 1♀ in MCP (9901); Linha Cristina, Caxias do Sul, June 6, 1993 (M. B. Martins), 1♂ 1♀ in MCP (4445); Santa Cruz do Sul, Nov. 20, 1994 (R. Ott), 1♂ 1♀ in MCP (5057); Fazenda Raconto da Figueira, Arroio dos Ratos, Aug. 1, 1986 (A. D. Bres-

covit), 2♂ 2♀ in MCN (15534); Novo Hamburgo, Apr. 25, 1976 and July 28, 1986 (C. J. Becher), 1♂ 2♀ in MCN (4081, 15455); Salto do Yucumá, Parque Estadal Doturo Tenente Portela, Jan. 16, 1985 (A. A. Lise), 2♂ 1 juvenile in MCN (13003); Garruchas São Borfa, Nov. 6, 1979 (H. Bischoff), 1♀ in MCN (8716); São Leopoldo, June 12, 1992 (A. B. Bonaldo), 1♀ in MCN (24733); São Leopoldo, Sept. 1, 1986 and Sept. 28, 1987 (C. J. Becker), 3♀ 1 juvenile in MCP (328, 330, 375); Sander-Tres Coroas, Nov. 23, 1983 (E. H. Buckup), 1♀ in MCN (11838). *Santa Catarina*: Rodovia, Concordia-Seara (27°12′S, 52°10′W), Jan. 30, 1996 (A. B. Bonaldo, A. Kury & R. Pinto-da-Rocha), 1♀ in MCN (27150); *Paraná*: Foz do Iguaçu, night collecting on railing of path, Mar. 24, 1985 (H. & L. Levi), 5♀ 2 juveniles in MCZ.

Metagonia tingo, new species

Figures 226–231

Metagonia sp., "I.D. #4": Huber, 1999: fig. 17.

TYPE: Male holotype from Tingo Maria, Dept. Huánuco, Peru; Nov. 21, 1946 (J. C. Pallister), in AMNH.

ETYMOLOGY: The species name is a noun in apposition, derived from the type locality.

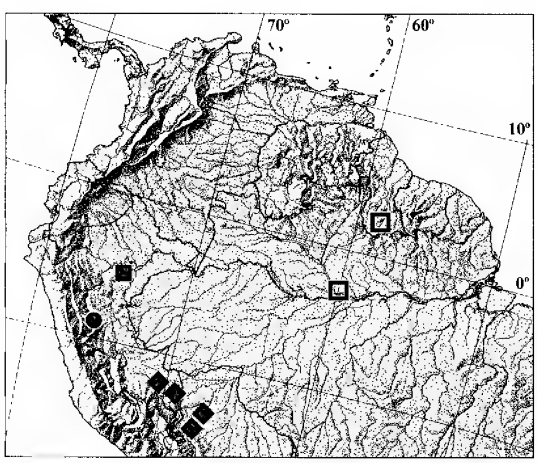
DIAGNOSIS: Representative of group 3 above; close relative of *M. samiria*, n. sp., easily distinguished by the procursus (compare figs. 230–231 with 238–240).

MALE (holotype): Total length 3.6, carapace width 1.1; leg measurements (legs loose or missing): femur 1: 9.1, tibia 3: 3.3. Habitus as in fig. 226. Carapace ochre, with dark brown mark (fig. 228), without thoracic groove, ocular area and clypeus dark brown, distance PME-ALE about 20% of PME diameter. Clypeus with strong, reddish-brown apophyses (fig. 227); sternum light ochre-yellow. Chelicerae ochre-yellow, unmodified except pair of black (sclerotized?) areas proximolaterally. Palps ochre-yellow to light brown, procursus reddish-brown with black spines; coxa without apophysis, femur without proximal retrolateral apophysis, but with strong prolateroventral apophysis consisting of various black cones (fig. 229), at rest lodged into cavity of procursus; procursus complex (figs. 230–231), slightly spiraling, apparently without hinged process; bulb consisting of simple globular part and tubular embolus ending in spine (fig. 230). Legs ochre-yellow, with dark brown patellae and tibia-metatarsus joints. Opisthosoma ochre-gray, with some light brown spots (fig. 226).

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality (map 1).

MATERIAL EXAMINED: PERU: *Huánuco*: Tingo Maria: type above.



Map 1. Known distribution of *Metagonia* Simon, species group 3 (see text): *M. tingo*, n. sp. (circle); *M. maldonado*, n. sp. (diamonds); *M. samiria*, n. sp. (dark square); *M. taruma*, n. sp. (light squares).

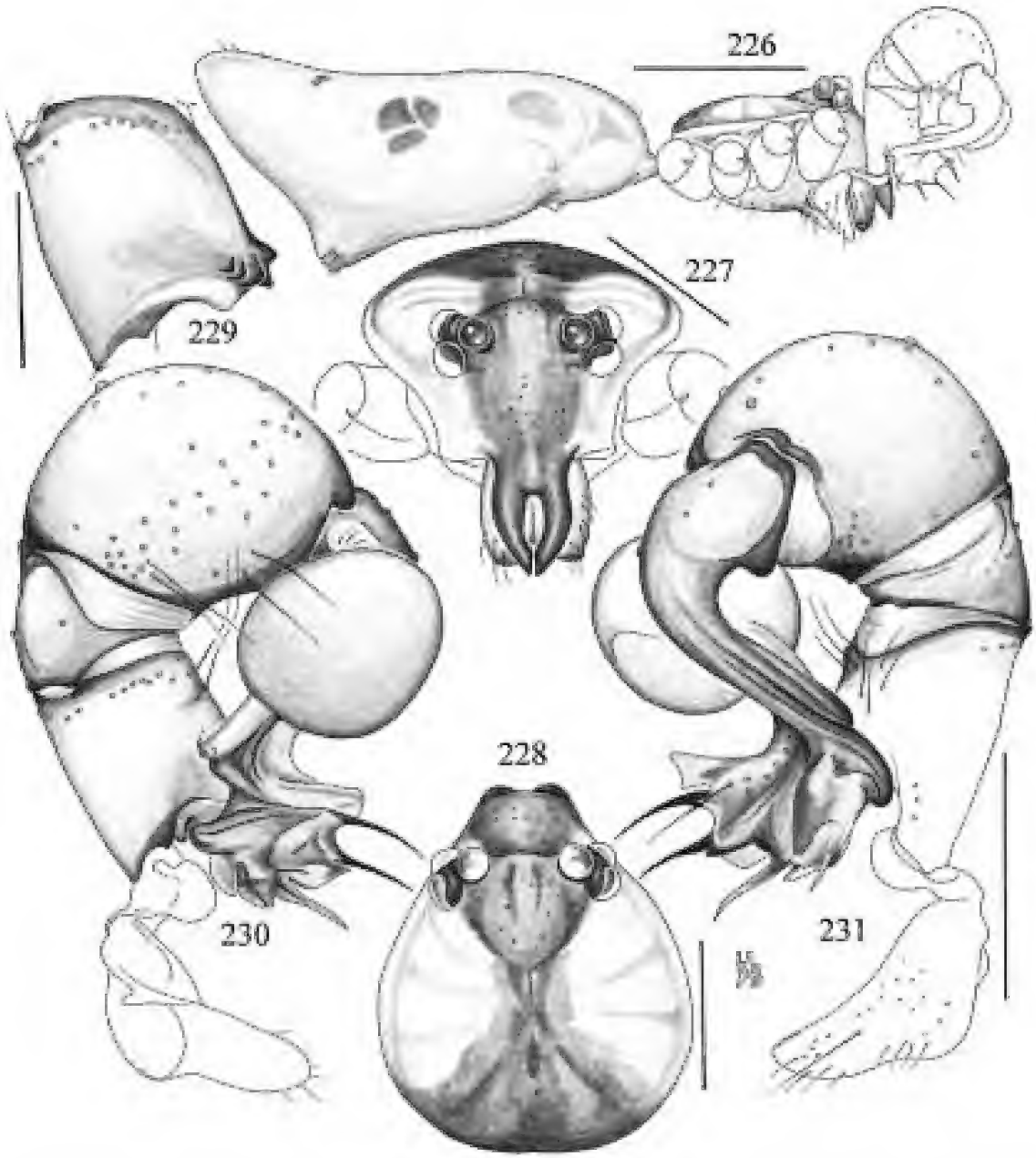
Metagonia taruma, new species

Figures 232–237

TYPES: Male holotype from "Kuyuwini Landing, Kuyuwini ni river," Upper Takutu-Upper Essequibo, Guyana; Nov. 20–21, 1937 (W. G. Hassler), in AMNH; 1♂ paratype from same locality, same data, in MZF.

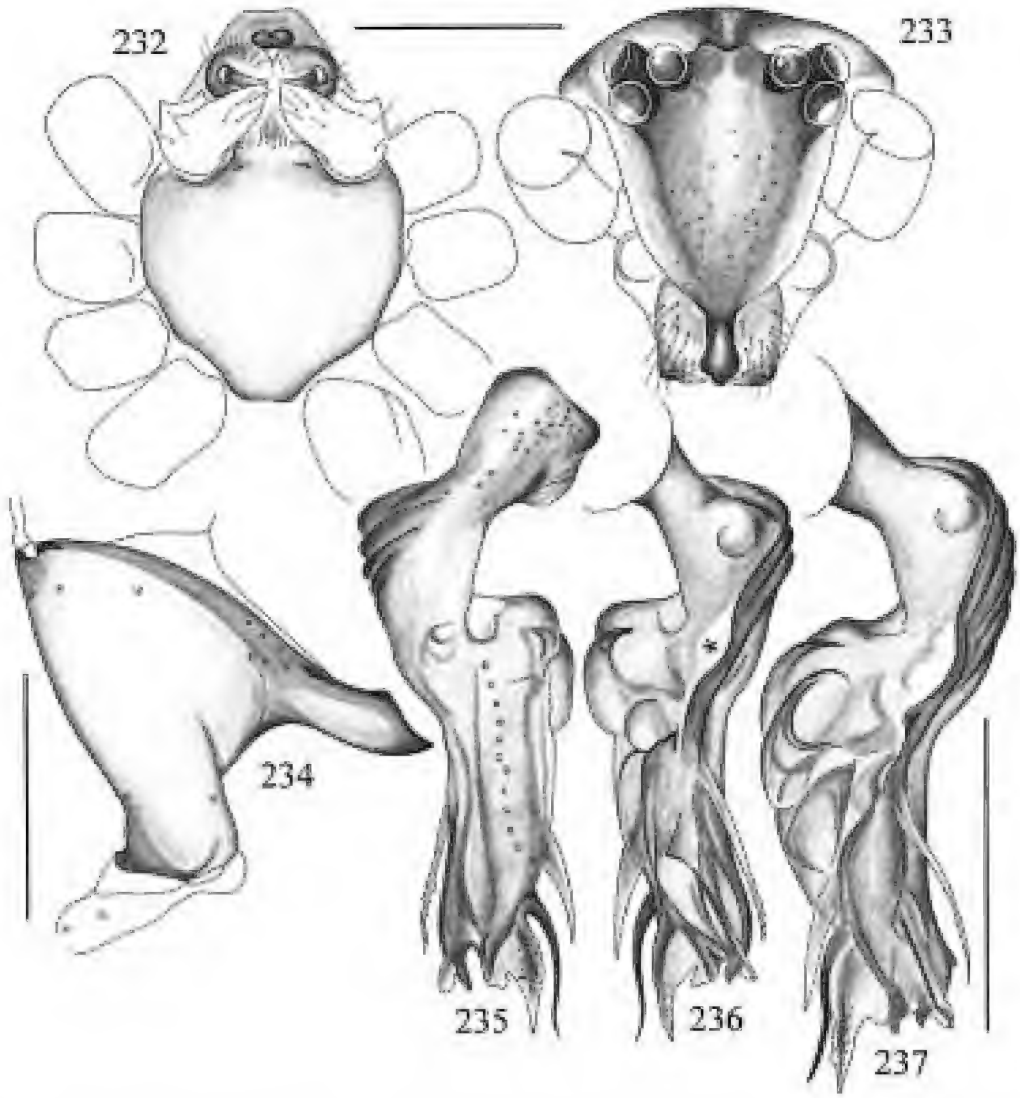
ETYMOLOGY: The specific name is a noun in apposition honoring the Taruma, a tropical forest people in Guyana who were devastated by an influenza epidemic in the mid-1920s. By 1980, only a handful of Taruma descendents were still aware of their tribal origins.

DIAGNOSIS: Easily distinguished from other representatives of group 3 above by the unpaired clypeal apophysis (fig. 233), the shape of the long palpal femur apophysis (fig. 234), and details of the procursus (figs. 235–236).



Figs. 226–231. *Metagonia tingo*, n. sp., male. **226**. Habitus, lateral view. **227–228**. Prosoma, frontal and dorsal views. **229**. Left palpal femur, prolateral view. **230**. Left palp, prolateral view. **231**. Left palp, retrolateral view. Scale lines: 1 mm (226), 0.5 mm (227–228, 230–231), 0.3 mm (229).

MALE (holotype): Total length 2.7, carapace width 0.8; legs fragmented. Carapace ochre, with dark brown mark as in *M. tingo* (cf. fig. 228), but with light longitudinal band within dark mark, without thoracic groove; ocular area brown, distance PME-ALE about 20% of PME diameter. Clypeus light brown, with strong median apophysis (fig. 233); sternum light ochre. Chelicerae ochre-yellow, unmodified. Palps light brown, femur apophysis and procursus slightly darker; coxa without retrolateral apophysis, femur



Figs. 232–237. *Metagonia taruma*, n. sp., male. **232–233**. Prosoma, ventral and frontal views. **234**. Right palpal femur, retrolateral view. **235–236**. Right procursus of male from Kuyuwini Landing, dorsal (235) and ventral (236) views (asterisk marks area where femur apophysis is lodged at rest). **237**. Right procursus of a male from Shudicar River, ventral view. Scale lines: 0.5 mm (232–233, 235–237), 0.3 mm (234).

without proximal retrolateral apophysis, but with long prolateroventral apophysis (fig. 234), at rest lodged into cavity of procursus (asterisk in fig. 236); procursus complex (figs. 235–236), slightly spiraling, apparently without hinged process, with several distal spines and fringes; bulb consisting of simple globular part and tubular embolus ending in spine. Legs light ochre, with darker patellae and tibia-metatarsus joints; retrolateral trichobothrium of tibia 1 at 10%. Opisthosoma shape, color, and spots as in *M. tingo* (cf. fig. 226).

FEMALE: Unknown.

VARIATION: The procursus of the male from Shudicar River (see below) differs slightly (fig. 237), but the apophyses on the palpal femur and clypeus are identical. The male from Manaus differs slightly with respect to the relative sizes of the distal elements of the procursus, and the clypeus

apophysis (the lateral "wings" are more prominent). Measurements of this male: carapace width 0.95; leg 1: (7.2+0.4+7.3, rest missing), tibia 2: 4.1, tibia 3: 2.3, tibia 4: 3.9; tibia 1 l/d: 92.

DISTRIBUTION: Known from Guyana and Brazil (Amazonas) (map 1).

MATERIAL EXAMINED: GUYANA: *Upper Takutu-Upper Essequibo*: types above; "Shudicar River, Upper Essequibo River," Jan. 1, 1938 (W. G. Hassler), 1♂ in AMNH. BRAZIL: *Amazonas*: Reserva Ducke, Manaus, Dec. 6, 1993 (H. Höfer), 1♂ in MCN (25175).

Metagonia samiria, new species

Figures 238–243

TYPES: Male holotype, 2♂ 3♀ paratypes from Alto Rio Samiria (5°07′S, 75°28′W), Dept. Loreto, Peru; May 1990 (T. Erwin "et al."), in MUSM.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Representative of group 3 above. Close relative of *M. tingo*, easily distinguished by the shape of the procursus (compare figs. 238–240 with figs. 230–231). Also, the clypeus apophyses are relatively smaller in the present species, and the palpal femur apophyses are longer (compare figs. 241, 229).

MALE (holotype): Total length 3.2, carapace width 0.9; leg 1: 36.0 (8.8+0.4+8.7+16.5 +1.6), tibia 2: 4.9, tibia 3: 2.8, tibia 4: 4.7; tibia 1 l/d: 96. Habitus and prosoma shape as in *M. tingo* (cf. figs. 226–228), only with posterior brown mark, ocular area light ochre-yellow, distance PME-ALE about 20% of PME diameter. Clypeus brown, with pair of apophyses as in *M. tingo* (cf. fig. 227); sternum light ochre-yellow. Chelicerae ochre-yellow, unmodified except pair of black marks proximolaterally. Palps ochre-yellow to light brown, procursus reddish-brown with dark distal parts; coxa without retrolateral apophysis, femur without proximal retrolateral apophysis, but with strong prolateroventral apophysis (fig. 241), at rest lodged into cavity of procursus; procursus complex (figs. 238–240), apparently without hinged process; bulb simple, as in *M. tingo* (cf. fig. 230). Legs yellowish, with brown patellae and tibia-metatarsus joints. Retrolateral trichobothrium of tibia 1 at 7.5%; tarsus 1 with over 20 pseudosegments. Opisthosoma (shape, color, markings) as in *M. tingo* (cf. fig. 226).

FEMALE (paratypes): Tibia 1: 6.6, 6.7, 7.2. In general very similar to male, but carapace and clypeus without brown marks, opisthosoma with long tip overhanging spinnerets. Epigynum light brown, with slightly projecting broad scape with distal pocket (fig. 242). Internally apparently fully symmetrical (fig. 243).

DISTRIBUTION: Known only from type locality (map 1).

MATERIAL EXAMINED: PERU: *Loreto*: Alto Rio Samiria: types above.

Metagonia maldonado, new species

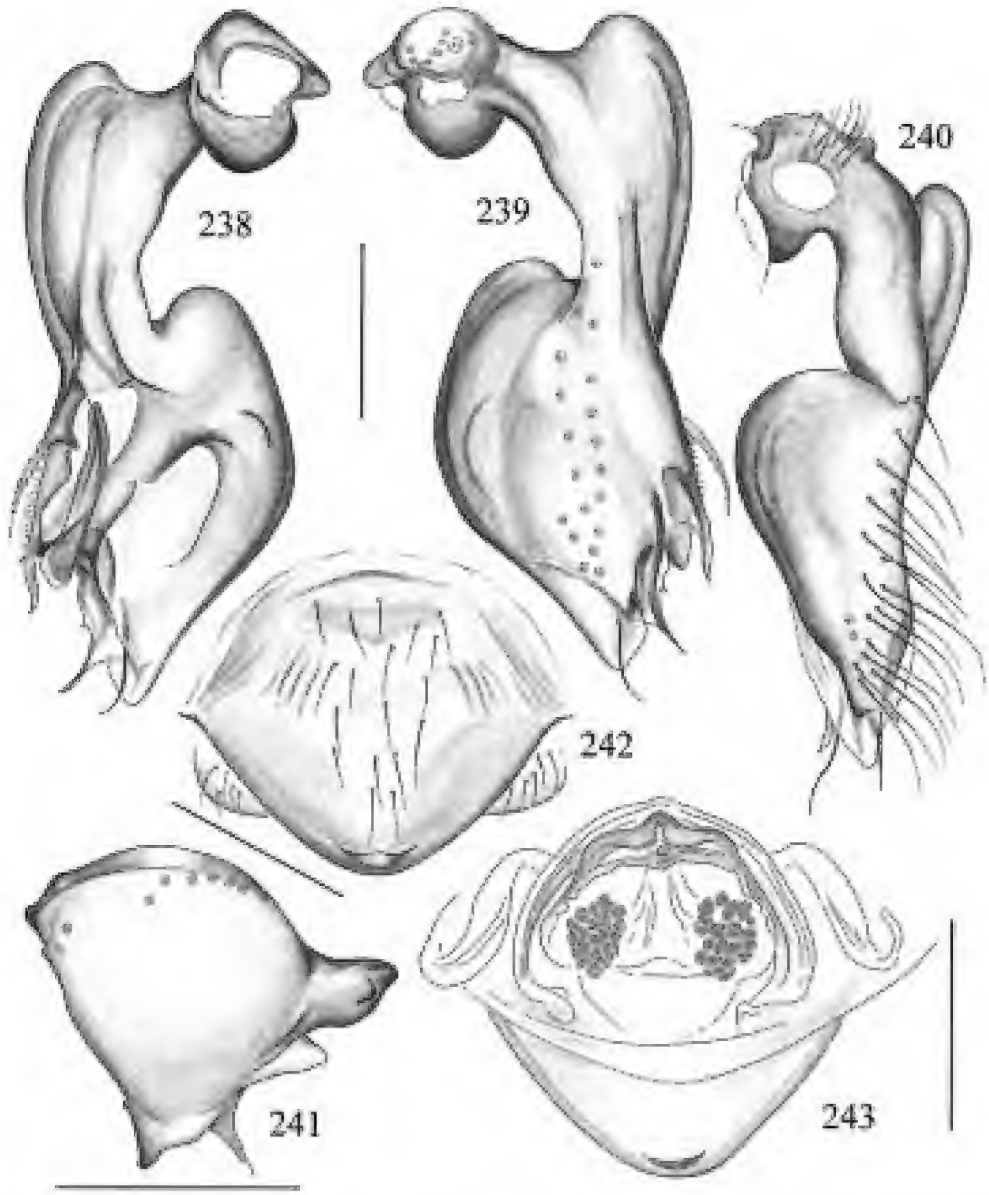
Figures 2, 62, 107, 114, 146, 244–248

TYPES: Male holotype, 9♂ 9♀ paratypes from 15 km E Puerto Maldonado (12°33′S, 69°03′W), Madre de Dios, Peru; 200 m elev., June–July 1989 and Feb. 25–Mar. 7, 1990 (D. Silva), in MUSM.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Representative of group 3 above. Easily distinguished from close relatives (*M. tingo*, *M. samiria*) by the tip of the procursus with its four pointed laminae and apophyses (figs. 244–245), by the shape and length of the femur apophysis (fig. 246), by the more widely separated clypeus apophyses (fig. 2), and by the shape of the epigynum (fig. 247).

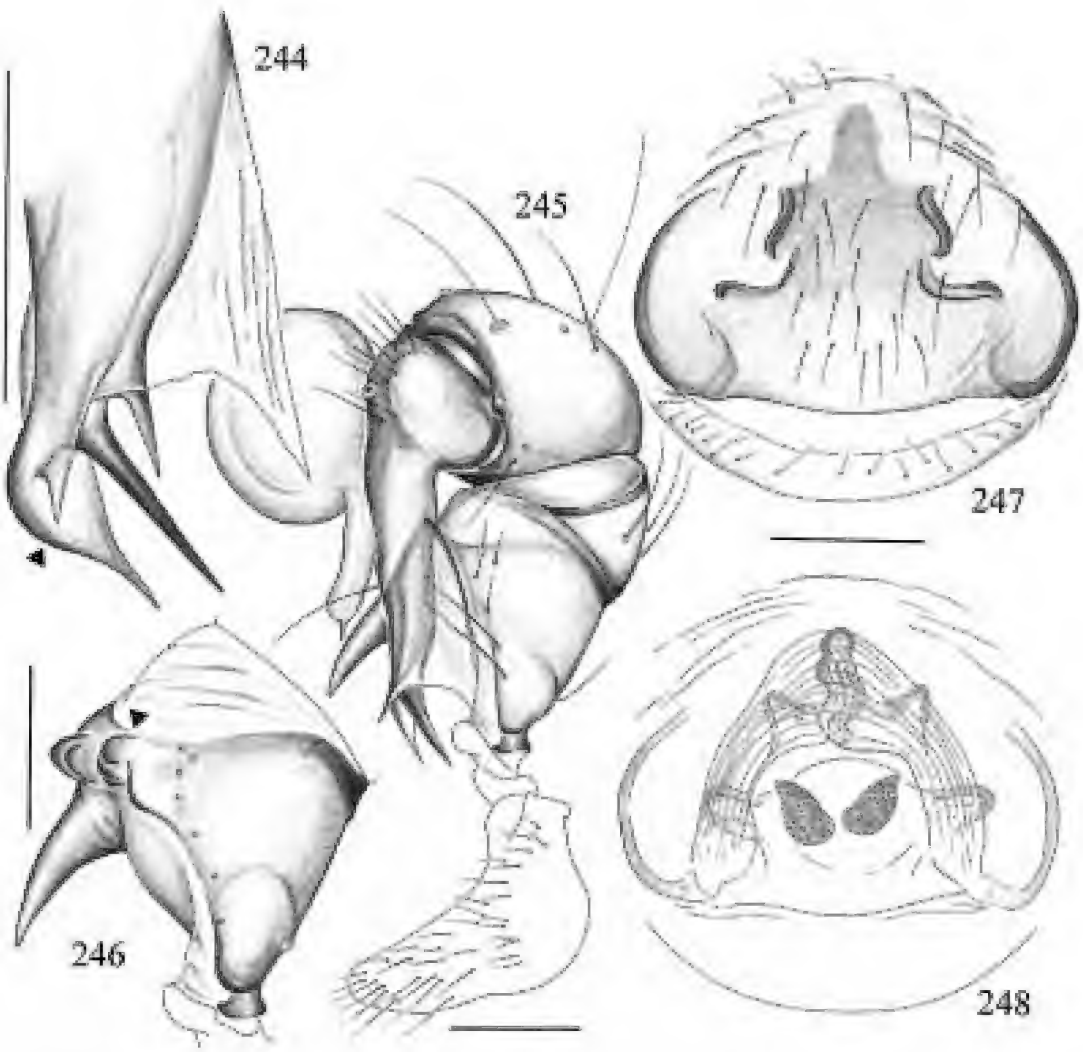
MALE (holotype): Total length 3.2, carapace width 1.0; leg 1: 33.6 (8.3+0.4+8.1+15.2 +1.7), tibia 2: 4.8, tibia 3: 2.7, tibia 4: 4.5; tibia 1 l/d: 94. Habitus and prosoma shape as in *M. tingo* (cf. figs. 226–228), only posterior third of carapace brown, ocular area brown, distance PME-ALE about 20% of PME diameter. Clypeus brown, with pair of apophyses as in fig. 2 (see also fig. 107); sternum whitish. Chelicerae ochre-yellow, unmodified except pair of darker (sclerotized?) areas under clypeal apophyses. Palps ochre-yellow to light brown, procursus with dark distal parts; coxa without apophysis, femur with long prolateroventral apophysis and series of smaller apophyses on ventrodistal margin (fig. 246); procursus relatively simple (figs. 244–245),



Figs. 238–243. *Metagonia samiria*, n. sp. **238–240**. Left procursus, ventral (238), dorsal (239), and prolateral (240) views. **241**. Male left palpal femur, prolateral view. **242**. Epigynum, ventral view. **243**. Epigynum, dorsal view. Scale lines: 0.3 mm.

without hinged process; bulb simple, as typical for genus (fig. 245); tarsal organ capsulate (fig. 62). Legs ochre-yellow, with brown patellae and tibia-metatarsus joints; without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 6.9%; tarsus 1 with ~ 25 pseudosegments. Opisthosoma ochre-gray with some indistinct darker spots dorsally, shape as in *M. tingo* (cf. fig. 226). Male gonopore with four epiandrous spigots (fig. 114), ALS with several piriform gland spigots (fig. 146).

VARIATION: The males from Tambopata, Beni, and La Paz (see below) differ slightly with respect to the dorsal spine of the procursus tip (arrow in fig. 244), which is slight-



Figs. 244–248. *Metagonia maldonado*, n. sp. **244**. Left procursus, retrolaterodorsal view (arrow: this structure is slightly narrower in males from Uchumachi, Tambopata, and Yucumo). **245**. Left male palp, retrolateral view. **246**. Male left palpal femur, retrolateral view (arrow: at this point, males from Uchumachi, Tambopata, and Yucumo have a small, additional apophysis). **247**. Epigynum, ventral view. **248**. Epigynum, dorsal view. Scale lines: 0.2 mm.

ly narrower, and with respect to the series of ventrodistal apophyses on the femur (most conspicuously, there is an additional upward-pointing apophysis where the arrow points to in fig. 246).

FEMALE (paratypes): Tibia 1 (N = 8) 6.0–7.1 ($\bar{x}$ = 6.5). In general very similar to male, but carapace and clypeus without distinct brown marks, only light brown spot posteriorly and light brown band between eye triads. Epigynum light brown with distinct darker marks and lateral margins (fig. 247). Internally apparently symmetric, with two pairs of folds that seem to originate from uterus externus (fig. 248).

DISTRIBUTION: Known from southern Peru (Madre de Dios) and northern Bolivia (Beni, La Paz) (map 1).

MATERIAL EXAMINED: PERU: *Madre de Dios*: 15 km E Puerto Maldonado: types above. Zona Reservada Tambopata, "Laguna Chica: noche" (12°50′S, 69°17′W), 290 m

elev., June 8, 1988 (D. Silva), 1♂ 1♀ in MUSM; Zona Reservada Tambopata, June 3–15, 1988 (3 vials; J. Coddington), 1♂ 2♀ in USNM; same locality, Nov. 7–12, 1983, and Sept. 6–14, 1984 (3 vials; T. L. Erwin "et al."), 1♂ 2♀ in USNM; Tambopata Reserve, Rio Tambopata, Explorer's Inn, Mar. 1988 (J. Palmar, D. Smith), 1♂ in MCZ; Zona Reservada de Manú, Rio La Torre and Rio Tambopata (12°50′S, 69°17′W), Aug.–Dec. 1979 (A. Rypstra), 6♀ in USNM. BOLIVIA: *Beni*: 16.8 mi SW Yucumo (~ 15°23′S, 66°59′W), ~ 500 m elev., Nov. 15–19, 1989 (2 vials; J. Coddington, C. Griswold, D. Silva, S. Larcher, E. Peñaranda), 5♂ 7♀ in USNM; *La Paz*: Cerro Uchumachi, 7 km SW Coroico, (~ 16°15′S, 67°21′W), ~ 1900 m elev., Nov. 24–25, 1989 (J. Coddington, C. Griswold, D. Silva, S. Larcher, E. Peñaranda), 3♂ 12♀ in USNM.

Metagonia beni, new species

Figures 249–255

TYPES: Male holotype, 3♂ 7♀ paratypes from 16.8 mi SW Yucumo (~ 15°23′S, 66°59′W), Dept. Beni, Bolivia; ~ 500 m elev., Nov. 15–19, 1989 (J. Coddington, C. Griswold, D. Silva, S. Larcher, E. Peñaranda), in USNM.

ETYMOLOGY: Named for the Bolivian state Beni. The specific name is a noun in apposition.

DIAGNOSIS: Typical representative of group 2 above. Very similar to *M. uvita* (from Costa Rica!), distinguished by the larger patch of modified hairs on the male chelicerae, the broader distal apophyses on the male chelicerae, and the female internal genitalia (compare figs. 253, 255 with figs. 8c, 9 in Huber, 1997a). Direct comparison of *M. uvita* specimens with the present material showed no perceptible differences in palpal structure (minor differences between figs. 450–451 herein and figs. 8d–e in Huber, 1997a, result largely from different angles of view, or are artifacts).

MALE (holotype): Total length 1.9, carapace width 0.63; leg 1: 17.2 (4.3+0.3 +4.3+7.1+1.2), tibia 2: 2.4, tibia 3: 1.3, tibia 4: 2.5; tibia 1 l/d: 80. Habitus as in fig. 249; entire prosoma whitish, distance PME-ALE very small (almost touching). Clypeus not sexually modified. Chelicerae slightly darker than prosoma, with light brown area covered with globular hairs and pair of distal apophyses (fig. 253). Palps pale ochre-yellow, only procursus with black elements; coxa and femur without apophyses; procursus complex (figs. 250–252), with hinged process; bulb simple, as typical for genus. Legs whitish, without darker rings, almost all hairs missing; retrolateral trichobothrium on tibia 1 apparently missing in holotype, in paratype at 8.8%; tarsus 1 with ~ 15 pseudosegments. Opisthosoma cylindrical (fig. 249), dirty white with slightly darker smudges dorsolaterally (~ 8 on each side).

VARIATION: Tibia 1 in three male paratypes: 3.7–4.1.

FEMALE (paratypes): Tibia 1 (N = 6) 3.3–3.9 ($\bar{x}$ = 3.5). In general very similar to male. Epigynum extremely simple externally, only with receptacle shining through cuticle (fig. 254); internal genitalia as shown in fig. 255, with distinctly asymmetrical receptacle(?).

DISTRIBUTION: Known from Peru (Huánuco, Madre de Dios) and northern Bolivia (Beni).

MATERIAL EXAMINED: BOLIVIA: *Beni*: 16.8 mi SW Yucumo: types above. PERU: *Huánuco*: Dantas-La Molina, SW Puerto Inca (9°38′S, 75°00′W), 270 m elev., May 28 and June 1, 1987 (2 vials; D. Silva), 3♂ in MUSM. *Madre de Dios*: Parque Nacional Manú, Zona Reservada Pakitza (11°56′S, 71°17′W), 356 m elev., Apr. 24–29, Sept. 26–30, and Oct. 1–19, 1991 (3 vials; D. Silva), 3♂ 2♀ in USNM; Pakitza, Rio Manú (12°07′S, 70°58′W), 250 m elev., Sept. 22, 1988 (T. L. Erwin & B. D. Farrel), 1♂ in USNM.

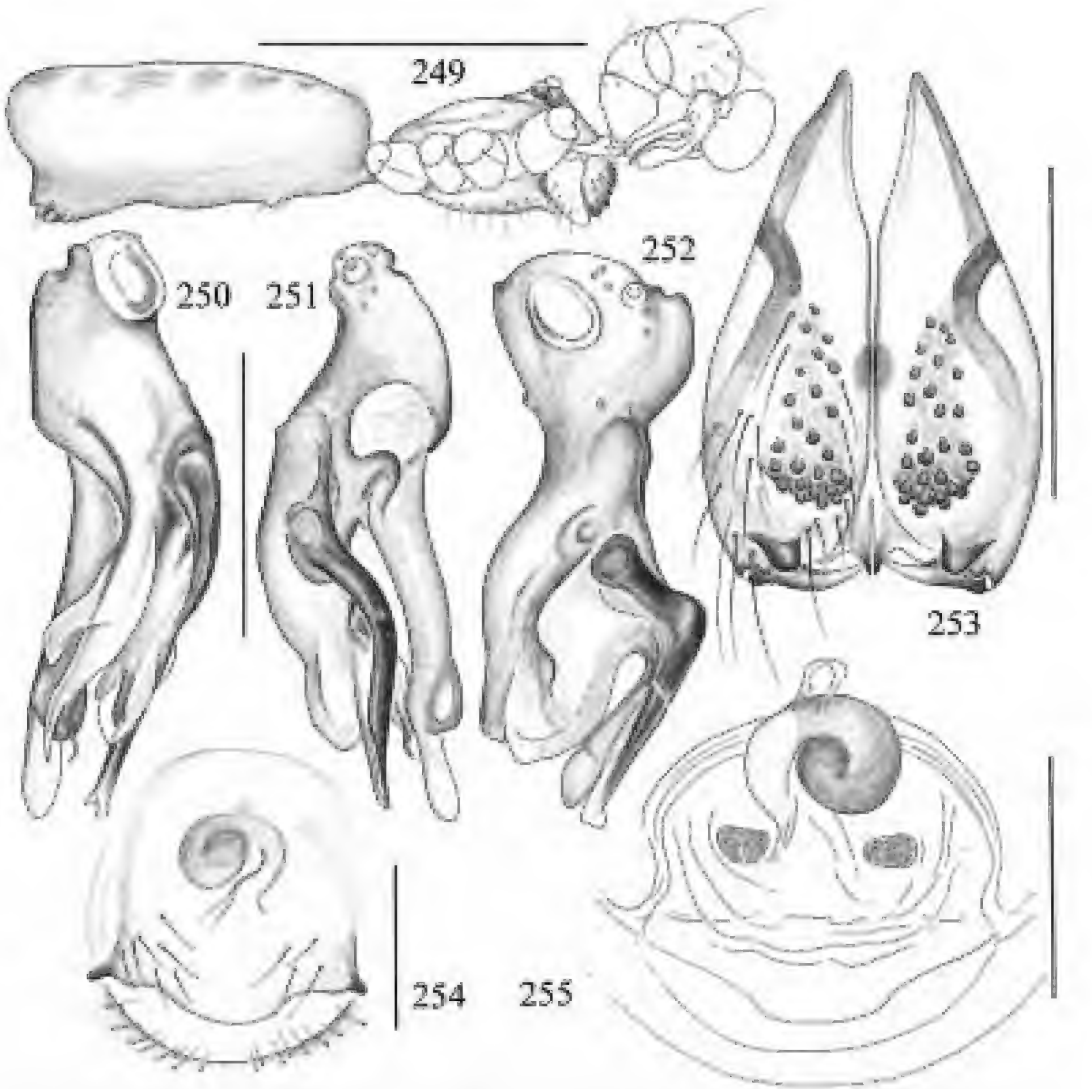
Metagonia mariguitarensis (González-Sponga, 1998), new combination

Figures 256–267

Anomalaia mariguitarensis González-Sponga, 1998: 25–27, figs. 21–32.

TYPES: Male holotype, 4♂ 12♀ paratypes from Mariguitar, Dept. Simon Bolívar, Edo. Sucre, Venezuela; 10 m elev., Dec. 22, 1986 (A. Campos), in collection González-Sponga (1004a, b) (not examined).

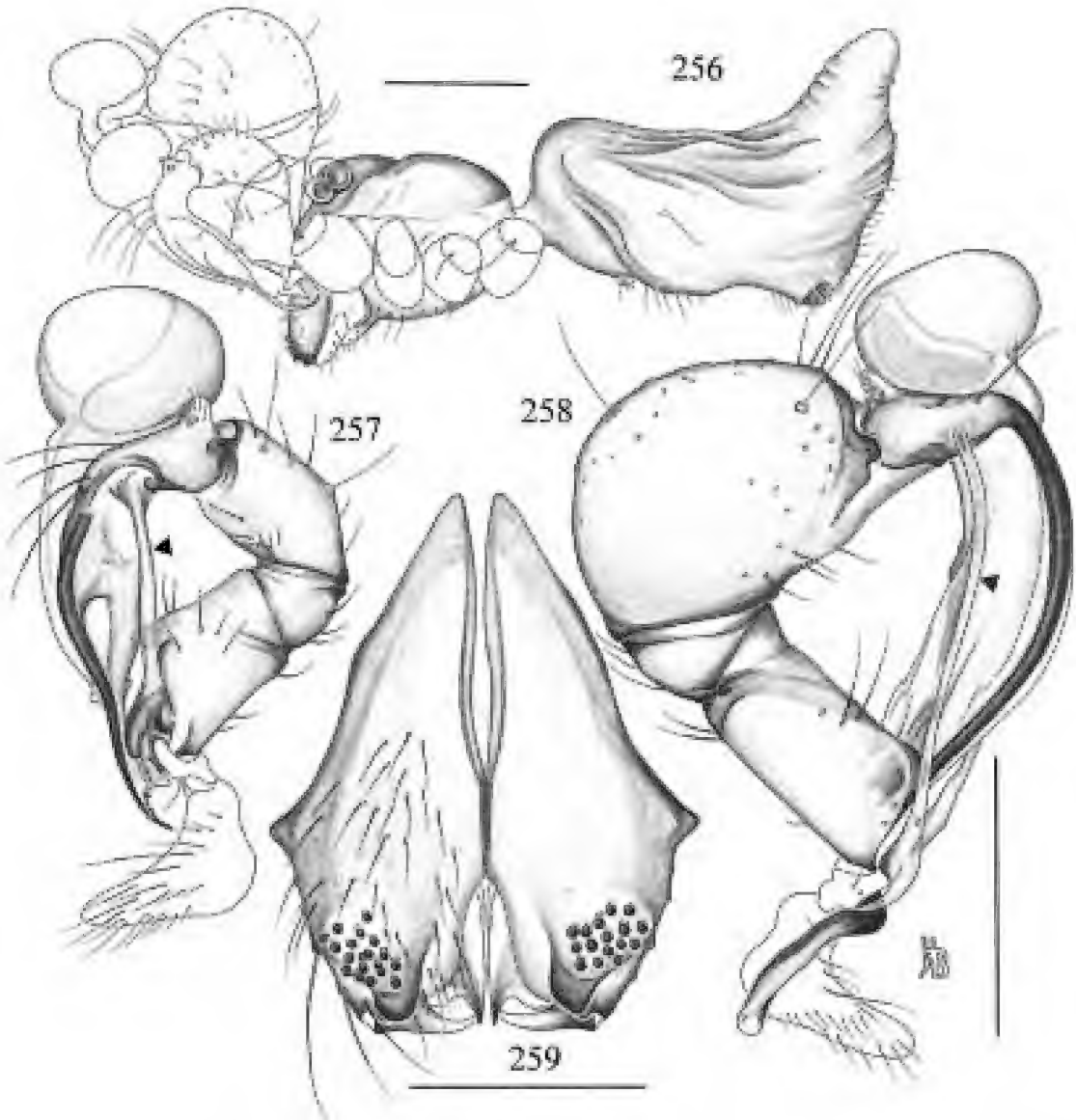
DIAGNOSIS: Representative of group 2 above (cheliceral apophyses!); easily distin-



Figs. 249–255. *Metagonia beni*, n. sp. **249**. Male habitus, lateral view. **250–252**. Left procursus, prolaterodorsal (250), retrolateral (251), and dorsal (252) views. **253**. Male chelicerae, frontal view. **254**. Epigynum, ventral view. **255**. Epigynum, dorsal view. Scale lines: 1.0 mm (249), 0.2 mm (250–255).

guished from congeners by the asymmetrical palps (figs. 257–258), the armature of the male chelicerae with their lateral pointed protrusions (fig. 259), and the shape of the asymmetrical structures in the female internal genitalia (figs. 262–263).

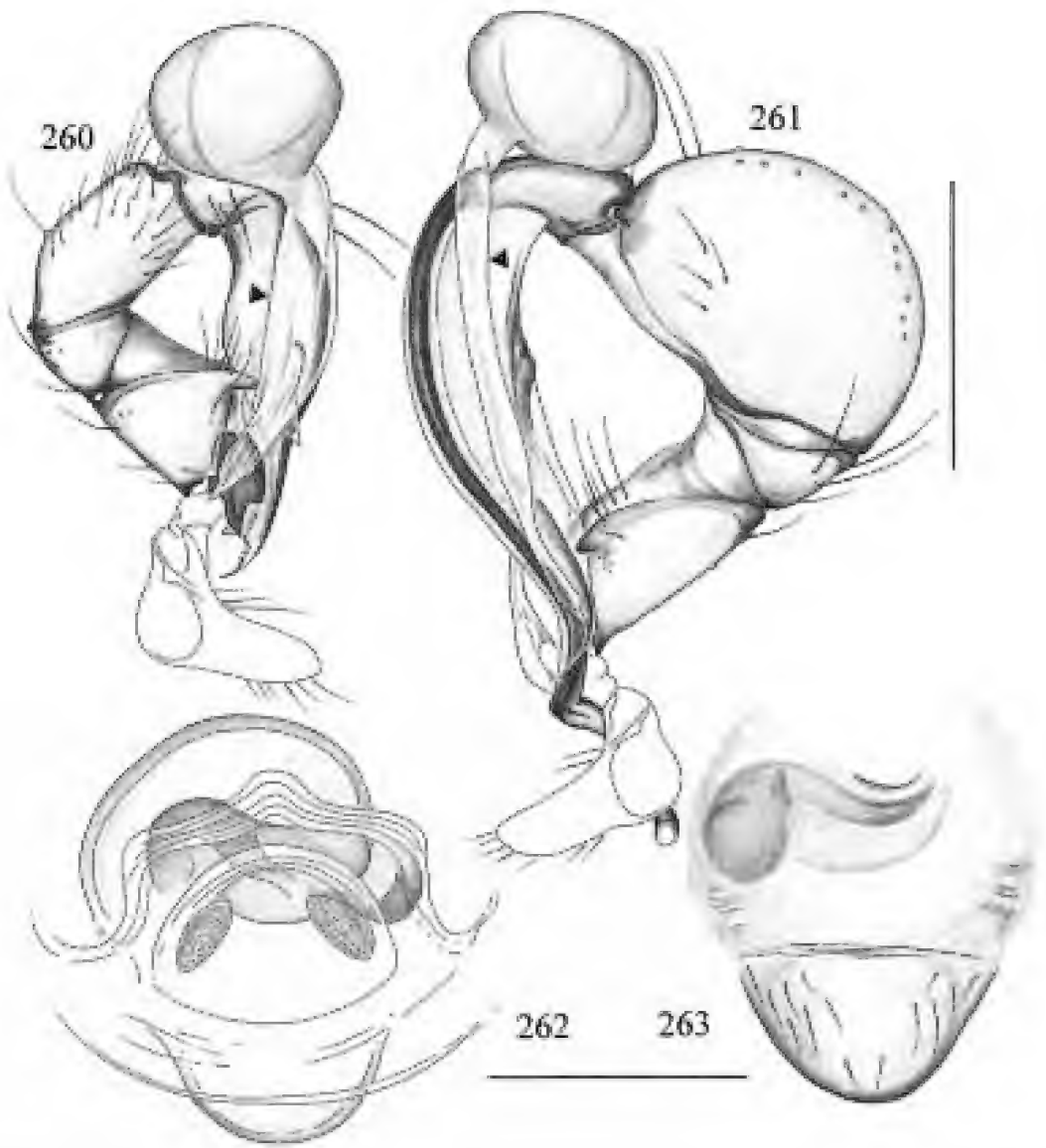
MALE (Roraima, Brazil): Total length 2.0, carapace width 0.77; leg 1 missing, tibia 2: 2.5, tibia 3: 1.6, tibia 4: 2.5. Habitus as in fig. 256. Carapace ochre-yellow, with triangular brown mark posteriorly; six eyes in two triads on brown ocular area, distance PME-ALE about 20% of PME diameter. Clypeus barely modified, only with pair of darker humps; sternum whitish. Chelicerae with distinctive lateral cone-shaped protrusions, frontal apophyses and patches of globular modified hairs (fig. 259). Palps asymmetrical in every aspect except coxa and (apparently) trochanter (figs. 257–258, 260–261): femur of right side longer and with differently shaped ventral apophysis, tibia of right side much larger, sclerotized rod (= main branch of procursus) of right side much stronger and



Figs. 256–259. *Metagonia mariguitarensis* (González-Sponga), male from Roraima, Brazil. **256**. Habitus, lateral view. **257**. Left palp, retrolateral view (arrow points to hinged process). **258**. Right palp, retrolateral view (arrow points to hinged process) (both palps drawn to same scale!). **259**. Chelicerae, frontal view. Scale lines: 0.5 mm (256–258), 0.2 mm (259).

longer, hinged process of right side long and slender, that of left side shorter but with complicated sclerotized tip, bulbs of both sides approximately same size, but embolus of left side shorter and much broader (figs. 260–261) (in all four males examined it was the right palp that was enlarged; the same applied to the five males studied by González-Sponga). Legs ochre-yellow, with dark brown patellae and tibia-metatarsus joints; most hairs missing. Opisthosoma grayish-ochre, with about six pairs of blackish spots dorsally, pointed posteriorly (not bifid).

FEMALE (Roraima, Brazil): Tibia 1 in two specimens: 3.8, 4.0. In general very similar to male, but opisthosoma projecting even far-

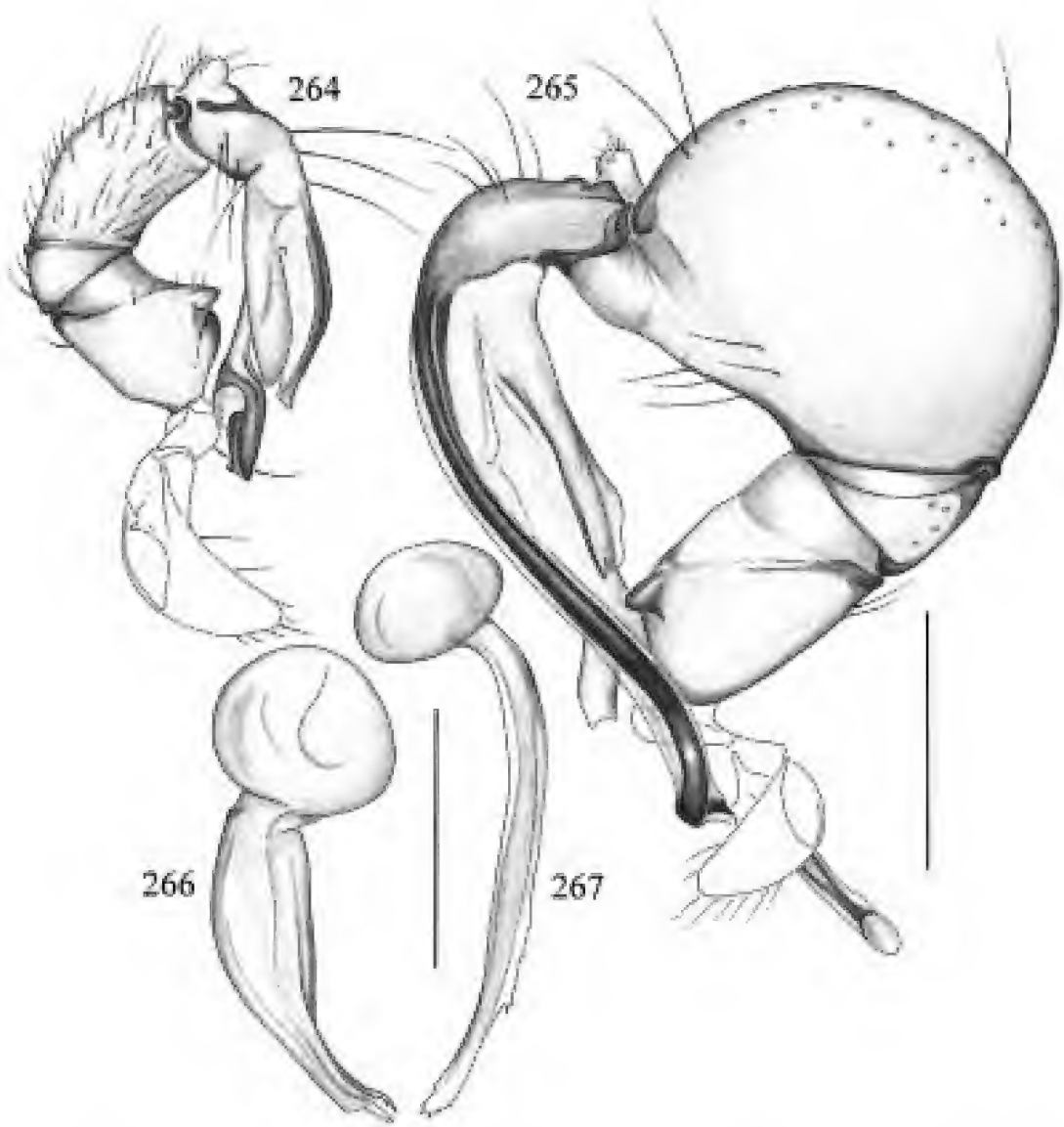


Figs. 260–263. *Metagonia mariguitarensis* (González-Sponga), from Roraima, Brazil. **260**. Left male palp, prolateral view (arrow points to embolus). **261**. Right male palp, prolateral view (arrow points to embolus) (both palps drawn to same scale!). **262**. Epigynum, dorsal view. **263**. Epigynum, ventral view. Scale lines: 0.5 mm (260–261), 0.3 mm (262–263).

ther beyond spinnerets, two to eight pairs of spots dorsally on opisthosoma, carapace with brown X mark and median line on ocular area. Epigynum very simple externally, with broad scape, asymmetrical structures shining through cuticle (fig. 263; in all six females examined the dark round structure was on the right side). Internally with apparently symmetrical uterus externus and valve, but asymmetrical system of ducts(?) and receptacle(?) (fig. 262).

DISTRIBUTION: Known from Venezuela (Sucre), northern Brazil (Roraima), and Peru (Loreto, Huánuco, Madre de Dios; see Notes below).

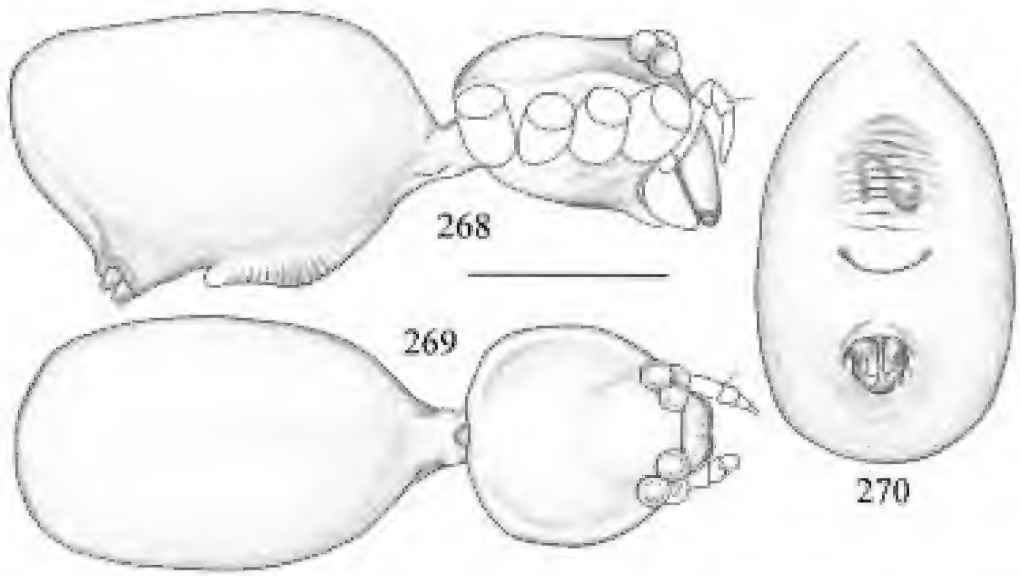
MATERIAL EXAMINED: BRAZIL: *Roraima*: Ilha Maracá, Jan. 31–Feb. 14, 1992 (A. A. Lise), 1♂ 4♀ in MCP. PERU (see Notes be-



Figs. 264–267. *Metagonia mariguitarensis* (González-Sponga), male from Peru (Loreto) (all figures drawn to same scale!) **264**. Left palp without bulb, prolateral view. **265**. Right palp without bulb, prolateral view. **266**. Left bulb, retrolateral view. **267**. Right bulb, retrolateral view. Scale lines: 0.5 mm.

low): *Loreto*: Rio Samiria (04°43′S, 74°18′W), June 24, 1990 (T. Erwin "et al."), 1♂ 1♀ in MUSM; *Huánuco*: Bosque Nacional A. von Humboldt, "El Caobal," July 31, 1986 (D. Silva), 1♂ in MUSM; *Madre de Dios*: Pakitza, Rio Manú (12°07′S, 70°58′W), 250 m elev., Sept. 22, 1988 (T. Erwin & B. D. Farrel), 1♂ 1♀ in USNM.

NOTES: While the specimens from Roraima are very prabably conspecific with the type material, the specimens from Peru are herein assigned tentatively. There are some differences suggesting they might actually belong to a separate species: the frontal apophyses on the male chelicerae are slightly more pointed; the pattern on the carapace of the male resembles that of the females from Roraima described above; the opisthosoma has many spots dorsally, and is less pointed posteriorly; the right palp is even more en-



Figs. 268–270. *Metagonia unicolor* (Keyserling), female holotype. **268–269**. Habitus, lateral and dorsal views. **270**. Opisthosoma, ventral view. Scale line: 0.5 mm.

larged (fig. 265, the left palp is about the same size as in male from Roraima); the femur apophyses differ slightly (compare figs. 260–261 with 264–265); in the left palp the sclerotized rod is shorter (compare figs. 260, 264; note that the apparent difference in the tips of the hinged processes shown in figs. 260 and 264 is mostly artificial, due to slightly different angles of view); the bulb is clearly dimorph in size (figs. 266–267; in the males from Huánuco and Madre de Dios, the bulb of the large palp is even smaller than in the male from Loreto, illustrated here); the left embolus is even broader and more sclerotized (fig. 266); the pore plates in the female uterus externus appear more elongate. Measurements of male from Loreto: total length 2.2, carapace width 0.87; leg 1: 19.1 (4.8+0.3+4.7+8.0+1.3), tibia 2: 2.9, tibia 3: 1.7, tibia 4: 2.8; tibia 1 l/d: 54; retrolateral trichobothrium of tibia 1 at 14%; tarsus 1 with ~ 20 pseudosegments. Tibia 1 in males from Huánuco and Madre de Dios: 5.3 (both). Female tibia 1: 4.1.

González-Sponga (1998) noted the presence of only one trichobothrium on the male palpal tibia. I checked the four males examined and found two trichobothria on all palpal tibiae, as in all pholcids examined. However, the distal (retrolateral) trichobothrium of the right palp appears to tend toward reduction (the hair base is smaller) and may actually be absent in the type material.

Metagonia unicolor (Keyserling, 1891), new combination

Figures 268–270

Spermophora unicolor Keyserling, 1891: 178–179, figs. 123, 123a–b. – Moenkhaus 1898: 88. – Mello-Leitão, 1918: 110–111. (Both Moenkhaus and Mello-Leitão simply translated Keyserling's original description, without adding new information.) – Mello-Leitão, 1947a: 3; fig. 50 (see Notes below).

TYPE: Female holotype from "Serra Vermelha," Rio de Janeiro, Brazil; no date (E. A. Göldi), in BMNH (1890.411.8340), examined.

NOTES: Without a male the species cannot be diagnosed. Mello-Leitão's (1947a) illustration of the palp is very unlikely from a conspecific male, given the large number of (mostly undescribed) very similar species in southeastern Brazil, and the fact that Mello-Leitão probably did not consult the type. The present brief redescription and illustrations may help identify the species when males and females are found together. *Metagonia unicolor* might be close to *M. furcata*, n. sp.,

and thus a representative of group 5, but it might also be a representative of group 2. In any case, the main point in the context of the present paper is that this species is very probably a *Metagonia*, supporting the statement that *Spermophora* is not a natural element in America (Brignoli, 1974; Huber, 1998d).

FEMALE (holotype): Total length 1.6, carapace width 0.6; leg 1: (2.0+0.2+2.1+2.4, tarsus missing), tibia 2: 1.3, tibia 3: 0.8, leg 4 missing; tibia 1 l/d: 33. Habitus as in figs. 268–269, entire spider pale ochre-yellow, internal genitalia apparently asymmetrical (fig. 270; as common in *Metagonia*, but so far not known in any other pholcid genus).

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BRAZIL: *Rio de Janeiro:* type above.

Metagonia furcata, new species

Figures 271–278

TYPES: Male holotype, 1♀ paratype, and one juvenile from Santa Teresa, Espírito Santo, Brazil; Jan. 26, 1959 (A. M. Nadler), in AMNH.

ETYMOLOGY: The species name is an adjective, referring to the fork-shaped clypeal apophysis in the male.

DIAGNOSIS: Easily distinguished from all known congeners by the male frontal armature, especially the long frontal fork (figs. 271–273); also by the armature on the male chelicerae (figs. 272–273), and the shape of the male procursus (figs. 274–276).

MALE (holotype): Total length 1.5, carapace width 0.6: leg 3 (all others loose): 4.0 (1.1+0.2+1.0+1.2+0.5), femur 4: 1.8. Carapace ochre-yellow, without thoracic groove; six eyes in two triads (fig. 272); distance PME-ALE about 25% of PME diameter. Clypeus with dark brown sculpture and ochre-yellow fork (figs. 271–273). Sternum pale ochre-yellow. Chelicerae light brown, with several globular hairs on frontal humps, prominent lateral apophyses, and stridulatory ridges laterally (figs. 272–273). Palps as in fig. 274; coxa without retrolateral apophysis, femur extremely voluminous (fig. 274), procursus complex (figs. 274–276), resembling that of *M. globulosa*, n. sp. (cf. figs. 286–287); bulb consisting of simple globular part and tubular embolus ending in spine. Legs pale ochre-yellow, without rings; tarsus 3 with ~ 10 pseudosegments. Opisthosoma monochromous pale gray, shape as in *M. unicolor* (cf. figs. 268–269).

FEMALE (paratype): Habitus as in male; all legs missing or loose. Without any dark marks. Without sclerotized epigynum, internal structures shining through cuticle (fig. 277). Internal genitalia as in fig. 278.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BRAZIL: *Espírito Santo*: types above.

Metagonia globulosa, new species

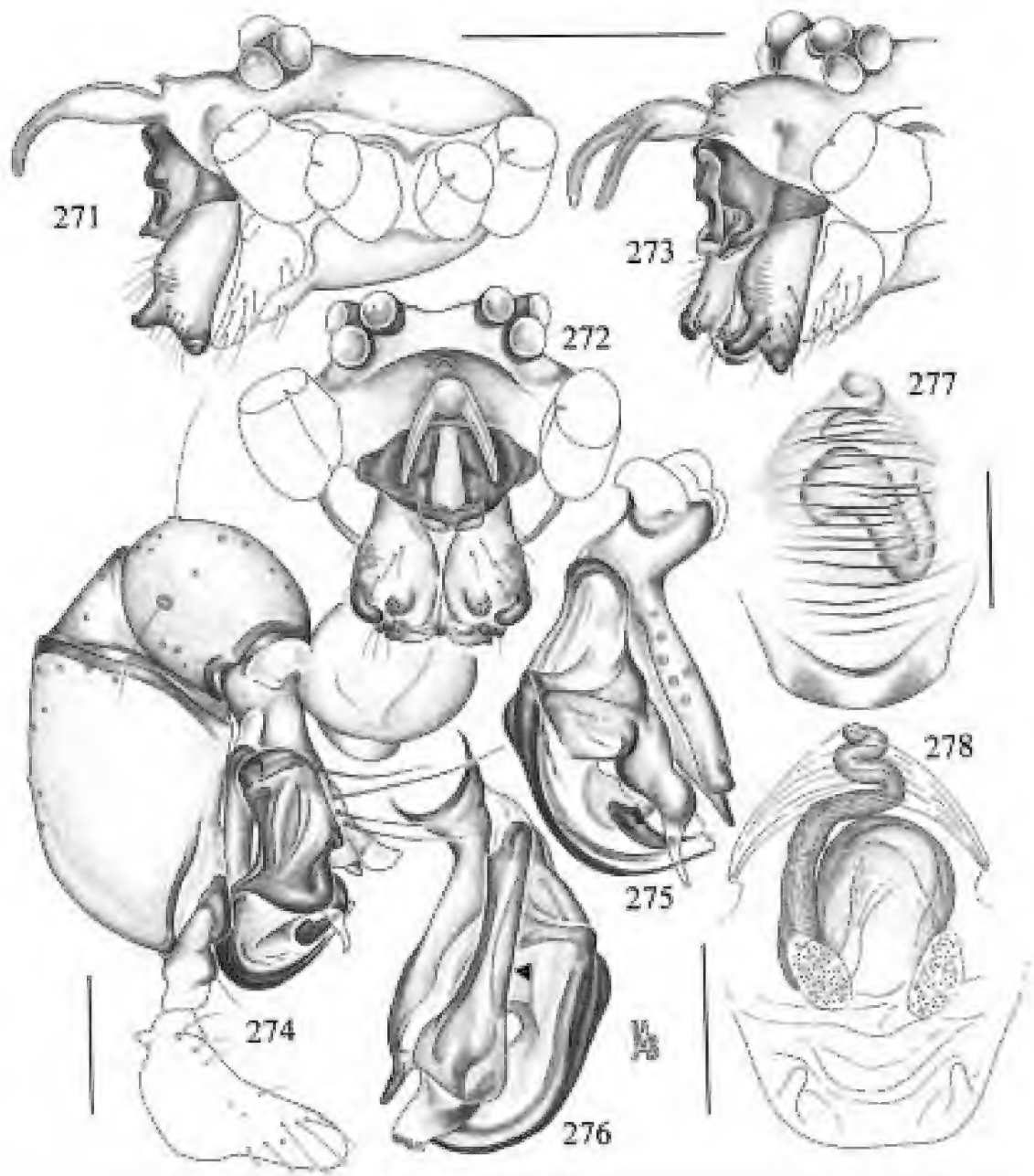
Figures 53, 65, 150, 279–290

TYPES: Male holotype, 2♂ 5♀ paratypes from Rio Samiria (04°43′S, 74°18′W), Dept. Loreto, Peru; May 13–June 24, 1990 (T. Erwin "et al."), in MUSM.

ETYMOLOGY: The species name is an adjective referring to the globular opisthosoma.

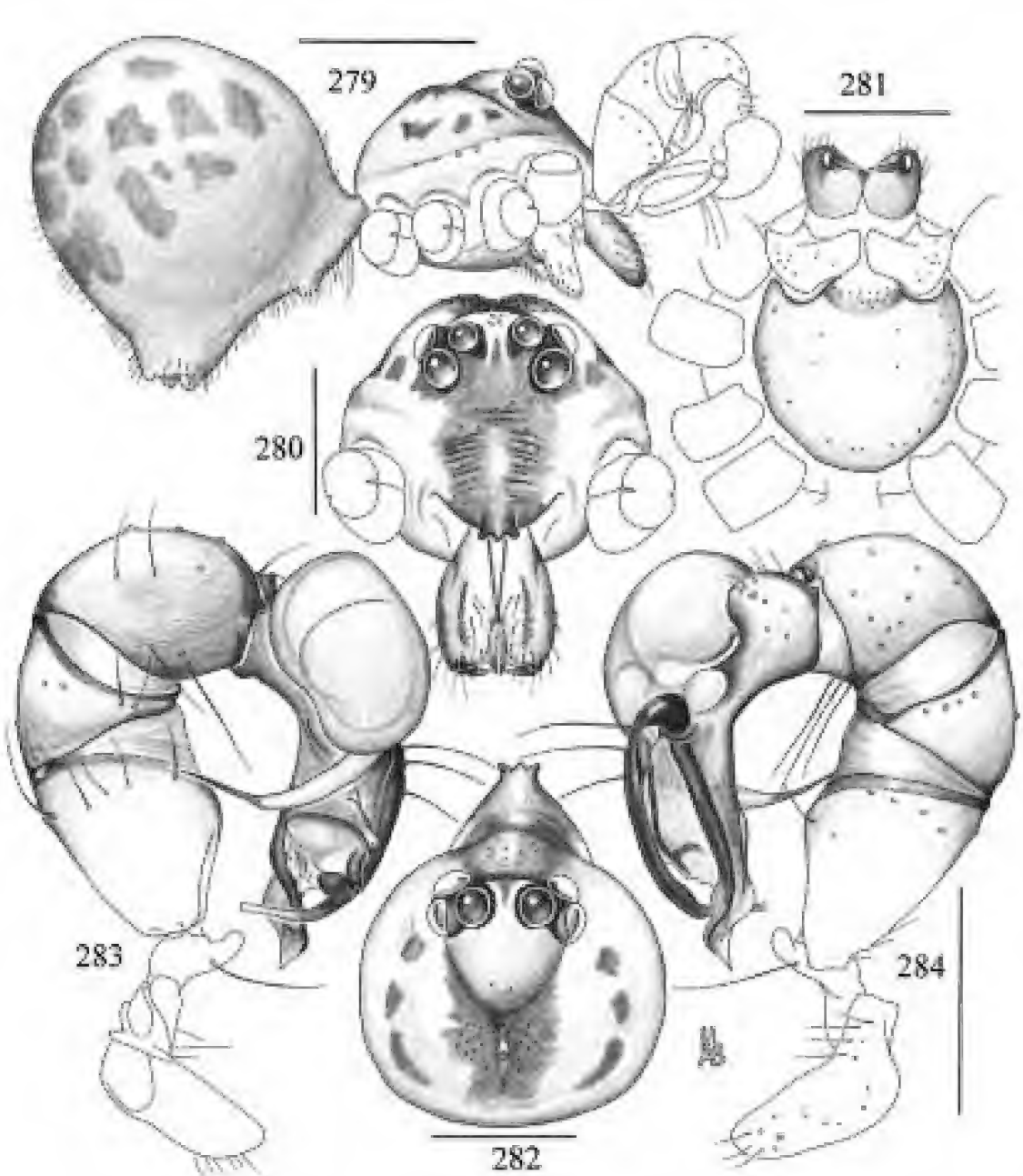
DIAGNOSIS: Easily distinguished from congeners by the globular abdomen (fig. 279), the presence of a thoracic groove (fig. 280), the short legs, the tripartite clypeal apophysis in the male (fig. 285), the shape of the procursus (figs. 286–287), and the female internal genitalia (fig. 290). *Metagonia furcata*, n. sp., is probably the closest known relative, but is easily distinguished by the habitus and the male clypeus.

MALE (holotype): Total length 1.4, carapace width 0.6; leg 1: 6.2 (1.6+0.2 +1.6+2.0+0.8), tibia 2: 1.1, tibia 3: 0.8, tibia 4: 1.1; tibia 1 l/d: 26. Habitus as in fig. 279. Carapace light ochre, with slightly darker median stripe and three pairs of lateral spots (fig. 282), thoracic groove distinct but shallow (fig. 280); six eyes in two triads; distance PME-ALE about 15% of PME diameter. Clypeus slightly darker than carapace; sternum ochre-yellow. Chelicerae light brown, with stridulatory ridges laterally, and rugose surface frontally (fig. 285). Palps light ochre, only cymbium and procursus darker brown to black; coxa without retrolateral apophysis, femur without proximal retrolateral apophysis, procursus complex (figs. 283–284, 286–287), with hinged process (arrow in fig. 286); bulb consisting of simple globular part and tubular embolus ending in



Figs. 271–278. *Metagonia furcata*, n. sp. **271–273**. Male prosoma lateral, frontal, and oblique views. **274**. Right male palp, retrolateral view. **275**. Right procursus, dorsal view. **276**. Right procursus, ventral view (arrow points to hinged process). **277**. Epigynum, ventral view. **278**. Epigynum, dorsal view. Scale lines: 0.5 mm (271–273), 0.2 mm (274, 277–278).

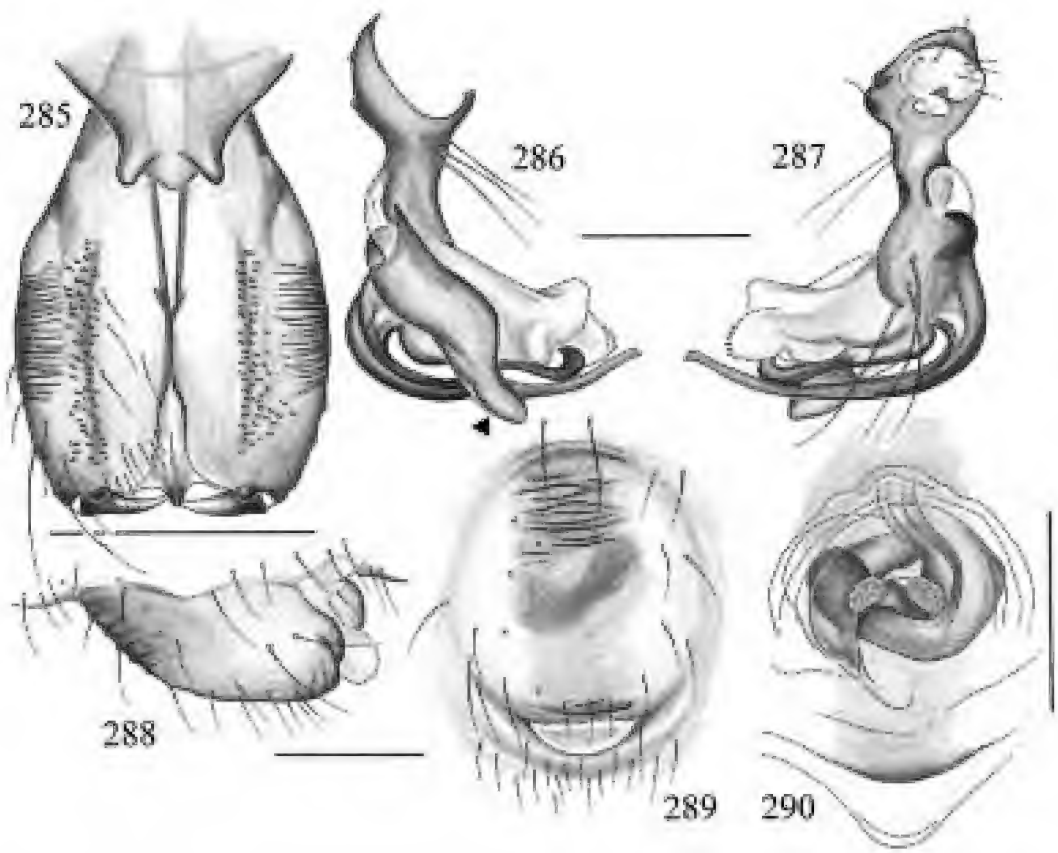
spine (figs. 53, 283). Legs light ochre, with dark rings on femora (proximally and subdistally) and tibiae (proximally and subdistally); retrolateral trichobothrium of tibia 1 at 21–23%; tarsus 1 with ~ 20 pseudosegments. Opisthosoma grayish-ochre, large blackish spots dorsally, large white spot above spinnerets.



Figs. 279–284. *Metagonia globulosa*, n. sp., male. **279**. Habitus, lateral view. **280–282**. Prosoma, frontal, ventral, and dorsal views. **283**. Left palp, prolateral view. **284**. Left palp, retrolateral view. Scale lines: 0.5 mm (279), 0.3 mm (280–284).

VARIATION: Tibia 1 in two male paratypes: 1.4, 1.6. Tibia 1 in male from Bolivia: 1.7.

FEMALE (paratypes): Total length 1.5–1.6; tibia 1: 1.4–1.5 (tibia 1 in females from Bolivia: 1.6–1.7). In general very similar to male. Epigynum protruding (fig. 288), light, with asymmetrical dark internal structures showing through (fig. 289). Internal genitalia complicated, possibly with receptacle (fig. 290). Females are either right- or left-sided with respect to the internal structures.



Figs. 285–290. *Metagonia globulosa*, n. sp. **285**. Male chelicerae and clypeal modifications, frontal view. **286**. Procursus, ventral view (arrow points to hinged process). **287**. Cymbium with procursus, dorsal view. **288**. Epigynum, lateral view. **289**. Epigynum, ventral view. **290**. Epigynum, dorsal view. Scale lines: 0.2 mm.

DISTRIBUTION: Apparently widely distributed from northern Peru to Bolivia.

NOTE: One label says "fogging palms . . . canopy epiphytes . . . ," suggesting that the species lives on (probably the undersides of) leaves, as typical for *Metagonia*.

MATERIAL EXAMINED: PERU: *Loreto*: Rio Samiria: types above; Alto Rio Samiria (5°12′S, 75°20′W), May 12, 1990 (T. Erwin "et al."), 1♂ in MUSM. BOLIVIA: *Beni*: Est. Biol. Beni (14°47′S, 66°15′W), ~ 225 m elev., Nov. 8–14, 1989 (J. Coddington, C. Griswold, D. Silva, S. Larcher, E. Peñaranda), 1♂ 3♀ (2 vials) in USNM.

LEPTOPHOLCUS SIMON, 1893

Leptopholcus Simon, 1893b: 474 (type species by original designation *L. signifer* Simon, 1893; not examined). – Brignoli, 1980: 649–655. – Huber, 1997a: 357–358.

TAXONOMIC NOTES: As discussed previously (Huber, 1997a), New World "*Leptopholcus*" may or may not be true *Leptopholcus*; in fact, *Leptopholcus* may even be a subjective synonym of *Pholcus* (Brignoli has speculated about this possibility long ago—Brignoli, 1980: 652), but this question has to be addressed by a very extensive study of Old World genera, practically of the entire *Pholcus* group sensu Huber (1995). This group has an almost exclusive Old World distribution, and presently includes over 200 nominal species. The point in this paper is to give further evidence of the very peculiar biogeography of this group. It seems to be completely absent in Central and South America

(with the exception of some synanthropic cosmopolitan species: *Pholcus phalangioides*, *Spermophora senoculata*, and *Micropholcus fauroti*), but has speciated independently in two relatively restricted areas in North America (eastern USA) and the Greater Antilles. The North American *Pholcus* species are currently being revised by R. Baptista, who currently recognizes up to seven species from the southeastern States, especially the Appalachian Mountains (R. Baptista, personal commun.). Central and South America have no native *Pholcus* species. The only neotropical species that has not yet been transferred or synonymized is *P. dubiomaculatus* Mello-Leitão, 1918. I have seen the type material (two males and one juvenile syntypes from "Pinheiro," Rio de Janeiro, Brazil; no further collection data, in MNRJ), and there is no doubt that this is *Pholcus phalangioides* (Fuesslin) (NEW SYNONYMY).

On the Antilles, two *Leptopholcus* species are currently recognized: *L. dalei* (Petrunkevitch, 1929) in Puerto Rico and the Virgin Islands (see New Records below), and *L. delicatulus* Franganillo, 1930 in Cuba (Huber and Pérez González, 1998). The present paper gives a few new records for these species, and descriptions of two new species, one restricted to Hispaniola, the other to Jamaica. The USNM has a single male specimen from Dominica, Lesser Antilles, which apparently represents a fifth species.

One observation that seems noteworthy but may be merely coincidental, is that the genus *Metagonia*, whose epigean representatives occupy a very similar if not identical microhabitat (the undersides of large leaves in humid forests), and which is extremely diverse in Central and South America, is apparently absent from the Antilles with the exception of blind, cavernicole species (Pérez González and Huber, 1999).

Leptopholcus dalei (Petrunkevitch, 1929)

Figures 27, 105, 302–305, 309

Micromerys dalei Petrunkevitch, 1929: 150–154, figs. 144–148.

Leptopholcus dalei: Deeleman-Reinhold, 1986a: 47. – Huber, 1997a: 356–358, figs. 22a–e, 23a–b, 24, 26a. – Huber and Pérez González, 1998: 251, figs. 6–10, 21.

NEW RECORDS: PUERTO RICO: Maricao, Hacienda Juanita, old coffee plantation, 600 m elev., Apr. 3 and Apr. 6, 1989 (2 vials) (H. & L. Levi), 2♀ in MCZ. Jayuya, old coffee plantation, gardens, ~ 1000 m elev., Mar. 20–26, 1986 (H. & L. Levi), 1♂ 1♀ in MCZ. Mayagüez: University farm (8 vials), Jan. 15–Feb. 21, 1964 (A. M. Chickering), 18♂ 19♀ and several juveniles in MCZ. Mayagüez, woods near nuclear center, Jan. 27, 1964 (A. M. Chickering), 2♂ 2♀ 2 juveniles in MCZ. 5 km E Mayagüez "on Rt. 106," Jan. 30, 1964 (A. M. Chickering), 1♂ 2 juveniles in MCZ. "Cidra, Treasure Island," Feb. 26–27, 1955 (A. M. Nadler), 1♂ 1 juvenile in AMNH. Rio Piedras, Mar. 2, 1953, Jan. 21–23, 1955, Mar. 14, 1959 (3 vials, A. M. Nadler), 2♀ 2 juveniles in AMNH. VIRGIN ISLANDS: *St. John*: above Cinnamon Bay, Mar. 17, 1970 (H., L. & F. Levi), 2♀ in MCZ. *St. Thomas*: "woods and grass," Dec. 11–13, 1965 (Levins & Cintron), 1♂ in AMNH.

Leptopholcus delicatulus Franganillo, 1930

Figures 291–294, 306

Leptopholcus delicatulus Franganillo, 1930: 59. – Huber and Pérez González, 1998: 251–256, figs. 1–5, 11–21.

Leptopholcus conicus Franganillo, 1931: 286. id. 1934: 153. id. 1936a: 46. id. 1936b: 78 (first synonymized by Franganillo 1936b, erroneous preference of junior synonym).

Micromerys dalei: Bryant, 1940: 296–297 (erroneous synonymization of *delicatulus* with *dalei*).

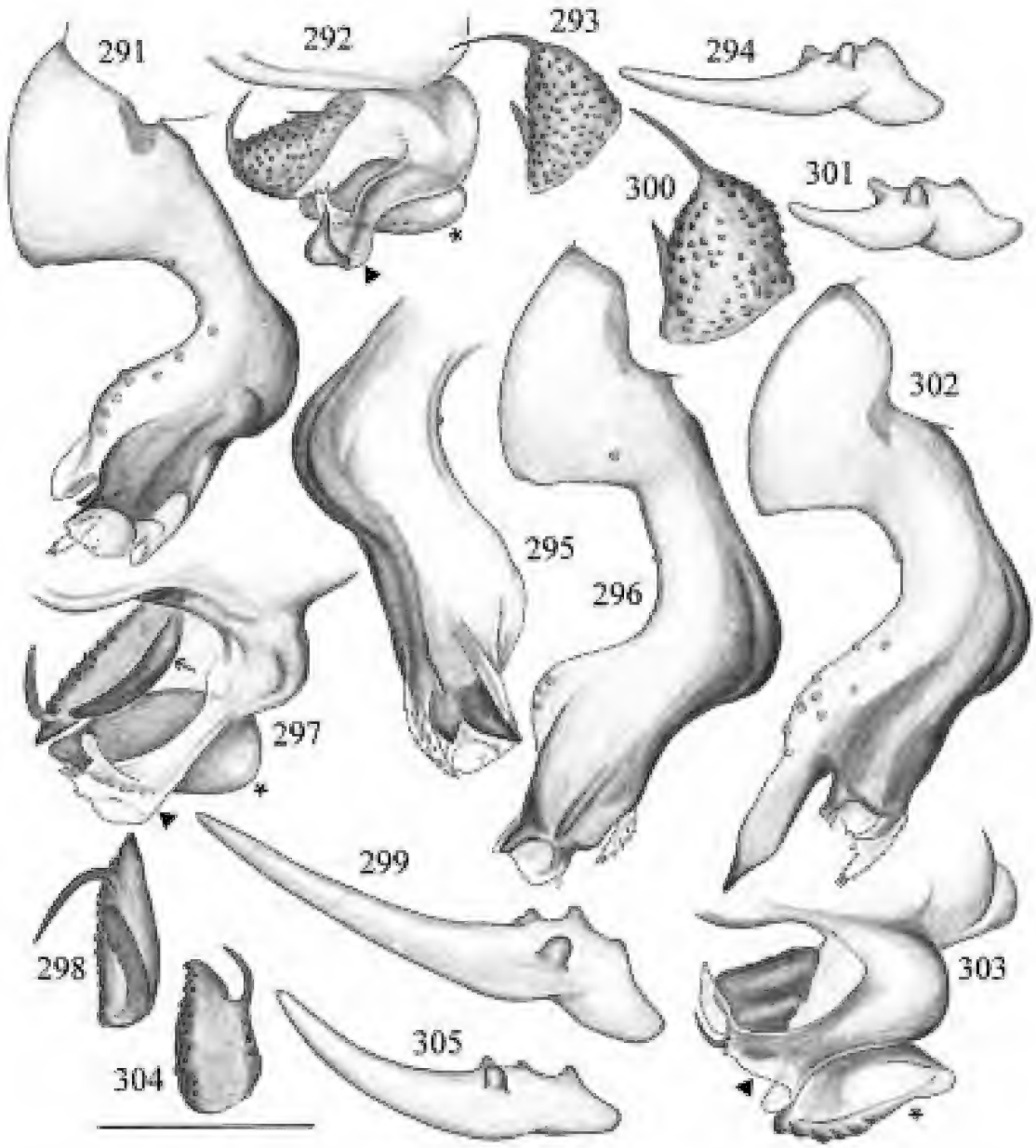
NEW RECORDS: CUBA: Oriente: S. Vicente, Caney, Nov. 1956 (no collector given), 2♂ in AMNH. Cuabitas, Santiago de Cuba, Dec. 18, 1955 (collector not given), 1♀ in AMNH.

NOTE: Bryant's (1940) material was recently thought to be lost (Huber, 1997a, Huber and Pérez González, 1998), but it has resurfaced at the AMNH, and will be returned to the MCZ.

Leptopholcus hispaniola, new species

Figures 300–301, 308

TYPE: Male holotype from Parque Nacional Bermudez Cienaga, La Vega Prov., Dominican Republic; 1100 m elev., tropical ev-



Figs. 291–305. *Leptopholcus* spp. from the Antilles, male diagnostic characters. 291–294. *L. delicatulus* Franganillo. **291**. Left procursus, retrolateral view. **292**. Bulbal projections (left bulb). **293**. Bulbal ''appendix.'' **294**. Left palpal trochanter, retrolateral view. 295–299. *L. jamaica*, n. sp. **295**. Left procursus, prolateral view. **296**. Left procursus, retrolateral view. **297**. Bulbal projections (left bulb). **298**. Bulbal ''appendix.'' **299**. Palpal trochanter. 300–301. *L. hispaniola*, n. sp. **300**. Bulbal ''appendix.'' **301**. Palpal trochanter. 302–305. *L. dalei* (Petrunkevitch). **302**. Left procursus, retrolateral view. **303**. Bulbal projections (left bulb). **304**. Bulbal ''appendix.'' **305**. Palpal trochanter. Arrows point to emboli; arrow with shaft points to distinctive apophysis on *L. jamaica* ''appendix''; asterisks mark ''unci.'' Scale line for all drawings: 0.2 mm.

ergreen forest, malaise, July 19–Aug. 2, 1995 (S. & J. Peck), in AMNH.

ETYMOLOGY: Named for the Island of Hispaniola. The specific name is a noun in apposition.

DIAGNOSIS: Close relative of *L. delicatulus*, distinguished by the shorter palpal trochanter apophysis (compare figs. 294, 301), the thicker palpal tibia (0.37 mm diameter in two *L. hispaniola* males versus 0.28–0.33 mm in five *L. delicatulus* males), and the broader bulbal appendix (compare figs. 293, 300).

MALE (holotype): Total length 3.8, carapace width 0.74; leg 1: 30.4 (6.9+0.3 +7.5+14.0+1.7), tibia 2: 5.0, tibia 3: 3.1, tibia 4: 4.5; tibia 1 l/d: 102. Habitus exactly as in other Caribbean *Leptopholcus* (cf. figs. 22a–b in Huber, 1997a). Carapace ochre-yellow, ocular area with brown band between eye triads; AME represented by black spots, but apparently without lenses; distance PME-ALE about 15% of PME diameter. Clypeus brown, sternum whitish; chelicerae ochre-yellow, with apophyses as in *L. dalei* and *L. delicatulus* (cf. fig. 24 in Huber, 1997a; fig. 11 in Huber and Pérez González, 1998). Palps ochre-yellow, trochanter apophysis very short: 0.12–0.13 mm in two males; procursus brown ventrally and distally, apparently identical to that of *L. delicatulus* (cf. fig. 291); bulb whitish with black apophyses, with distinctive appendix. Legs light ochre-yellow, with dark patellae and tibia-metatarsus joints; apparently without spines, without curved and vertical hairs (many hairs missing); retrolateral trichobothrium of tibia 1 at 4%; tarsus 1 with ~ 35 pseudosegments. Opisthosoma grayish, without spots (bleached?).

VARIATION: Tibia 1 in other male studied: 6.9; in this male there is absolutely no trace left of the AME, but the genitalia are indistinguishable from those of the type specimen.

FEMALE (Haiti): Total length 3.6, carapace width 0.65; leg 1 missing. Opisthosoma even more elongated above spinnerets than in male, with dark spots dorsally; AME more clearly present, apparently with lenses; internal genitalia as in fig. 308. An egg sac accompanies the female, and is remarkable for being relatively tightly woven, in contrast to the few threads of *Metagonia* egg sacs.

DISTRIBUTION: Known from one locality in Haiti, and two localities in the Dominican Republic.

MATERIAL EXAMINED: DOMINICAN REPUBLIC: *La Vega*: type above; forest between Hato Mayor and Sabana de la Mar, July 20, 1935 (W. G. Hassler), 1♂ in AMNH. HAITI: *Port-au-Prince*: Damiens, Nov. 10, 1959 (A. M. Nadler), 1♀ in AMNH.

Leptopholcus jamaica, new species

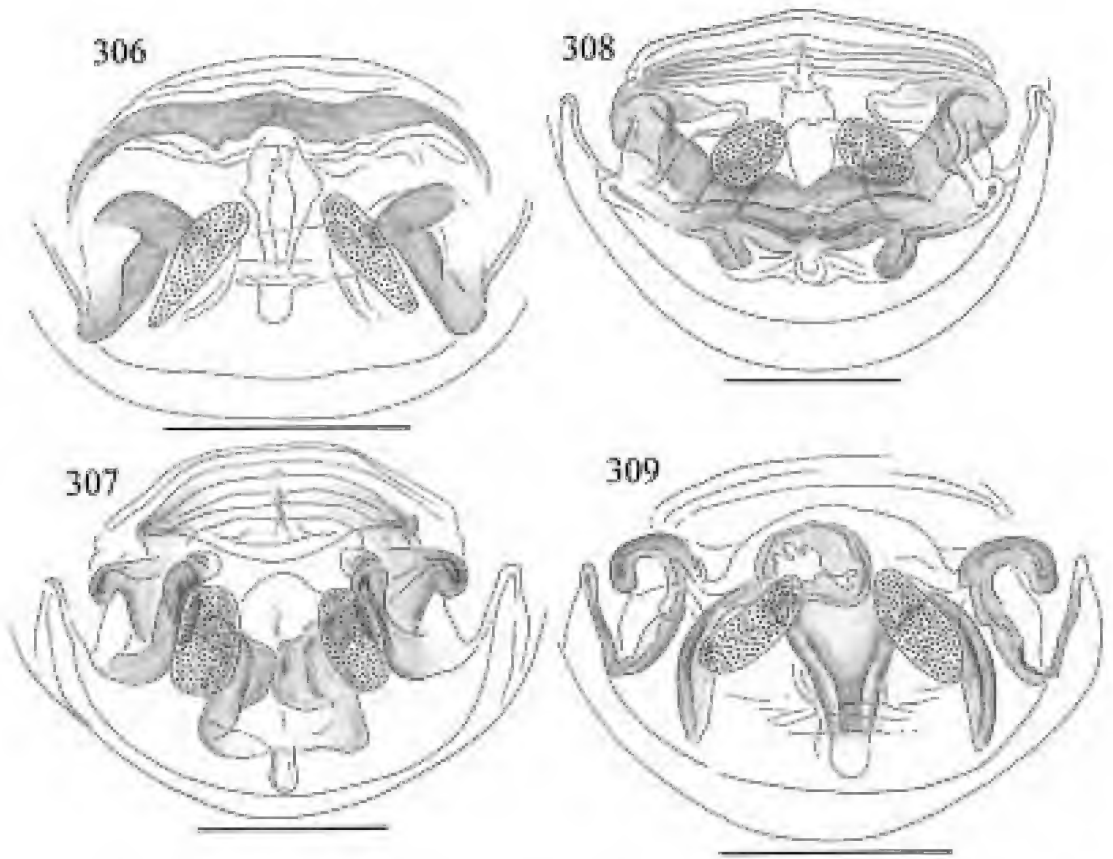
Figures 294–299, 307

TYPE: Male holotype from Askenish, Trail to Dolphin Head, Hanover Prov., Jamaica; June 24, 1954 (A. M. Chickering), in MCZ.

ETYMOLOGY: Named for the Island of Jamaica. The specific name is a noun in apposition.

DIAGNOSIS: Easily distinguished from the other Caribbean species by the long apophysis originating from the bulbal appendix (arrow with shaft in fig. 297); also by the tip of the appendix projecting over the spine (fig. 298), and the very long, almost straight palpal trochanter apophysis (fig. 299).

MALE (holotype): Total length 4.8, carapace width 0.84; leg 1: (8.5+0.4+8.1+16.1, tarsus missing), tibia 2: 5.6, tibia 3: 3.3, tibia 4: 5.5; tibia 1 l/d: 102. Habitus exactly as in other Caribbean *Leptopholcus* (cf. figs. 22a–b in Huber, 1997a). Carapace ochre-yellow, ocular area with large brown, about triangular mark; AME as in *L. delicatulus* (small, but with lenses); distance PME-ALE about 15% of PME diameter. Sternum whitish; chelicerae ochre-yellow, with apophyses as in *L. dalei* and *L. delicatulus* (cf. fig. 24 in Huber, 1997a; fig. 11 in Huber and Pérez González, 1998). Palps ochre-yellow, trochanter apophysis very long: 0.36–0.37 mm in three males; procursus brown ventrally and distally, with distinct distal apophyses and laminae (figs. 295–296); bulb whitish with black apophyses, with distinctive apophysis originating from basis of appendix (arrow with shaft in fig. 297). Legs light ochre-yellow, with light brown patellae and tibia-metatarsus joints; apparently without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 4.5%. Opisthosoma ochre-yellow, with some very faint darker spots dorsally.



Figs. 306–309. *Leptopholcus* spp. from the Antilles, female internal genitalia, dorsal views. **306**. *L. delicatulus* Franganillo. **307**. *L. jamaica*, n. sp. **308**. *L. hispaniola*, n. sp. **309**. *L. dalei* (Petrunkevitch). Scale lines: 0.2 mm.

VARIATION: Tibia 1 in two other males: 7.0, 8.0.

FEMALE (Heremitage Reservoir): Tibia 1: 5.9. In general very similar to male, but without brown mark on ocular area. Internal genitalia as in fig. 307.

DISTRIBUTION: Known only from Jamaica.

MATERIAL EXAMINED: JAMAICA: *Hanover*: type above, with 1 juvenile; *St. Andrew:* Heremitage Reservoir, Feb. 5, 1957 (A. M. Chickering), 1♂ 1♀ in MCZ; "Grove Place," July 15, 1960 (Vauries), 1♂ in AMNH.

NINETIS SIMON, 1890

Ninetis Simon, 1890: 95–96 (type species by original designation *Ninetis subtilissima* Simon, 1890; examined).

Myrmidonella Berland, 1919: 349 (type species by original designation *Myrmidonella minuta* Berland, 1919; examined). NEW SYNONYMY

JUSTIFICATION OF SYNONYMY: The type material of *N. subtilissima* is in very bad shape (see redescription below), but Simon's (1890, 1893b) figures and descriptions leave little doubt that the two additional species treated herein are closely related to *N. subtilissima*. Simon's (1893b) fig. 488 clearly shows the characteristic ventral spine on the bulb, and fig. 489 shows the long cheliceral apophyses. In the original description, Simon (1890) describes these apophyses as slightly diverging and curved at the tips, a description that perfectly fits the two other species treated herein. Also, the pair of sclerotized arches in the female internal genitalia of *N. subtilissima* (arrow in fig. 314) are strikingly similar to those in *N. minuta* (arrow in fig. 330). More-

over, I have seen specimens recently collected by A. van Harten in Yemen close to the type locality of *N. subtilissima* (one male, two females) that are very probably conspecific with Simon's specimens. They are clearly conspecific with the two additional species treated below.

However, the description of the East-African material below under the name *Ninetis minuta* (Berland) raises two questions: first, is the material really conspecific with *Myrmidonella minuta* Berland? And second, is *Myrmidonella* Berland really a synonym of *Ninetis* Simon? Both questions are difficult to answer, as *M. minuta* was only described from the female, and the single female specimen cannot be found in the MNHN in Paris. The original description would fit almost any ninetine, and the only possibly distinctive feature, the protruding female genitalia, may simply result from a mass of sperm inside (it is common in pholcids that sperm-filled female genitalia are protruding). This may also account for the ventral views given by Berland (1919: fig. 9; 1920: fig. 149). Thus, only two rather weak arguments favor conspecificity: the absence of evidence to the contrary; and the fact that all the material has been collected within a radius of just about 230 km.

Assuming that the material is in fact conspecific, the synonymy of *Myrmidonella* and *Ninetis* follows logically from what is stated above. But even if the assumption were wrong, analogous arguments to those presented above also apply here: first, there is no evidence to the contrary; second, geographically, *Ninetis* has a known range from Yemen to Namibia, with Nairobi (the type locality of *Myrmidonella*) right in-between. More intense collecting in Tanzania and Kenya should easily solve this problem more satisfactorily.

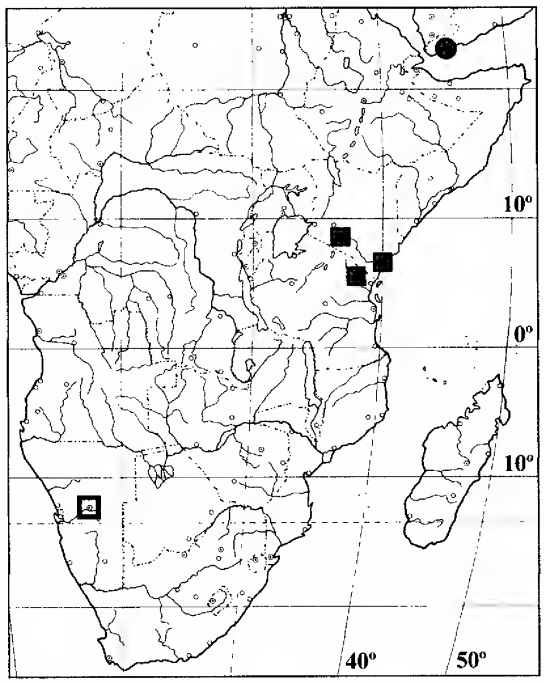
DIAGNOSIS: Tiny (total length ~ 1–1.25 mm), eight-eyed pholcids with globular opisthosoma, relatively short legs, simple procursus, a pair of pointed apophyses on male chelicerae; distinguished from other short-legged genera by long ventral spine on the bulb (figs. 321, 324; a similar structure occurs in *Nerudia*, a short-legged New World genus, which differs by the presence of stridulatory files on the male chelicerae).

DESCRIPTION: Total length ~ 1–1.25 mm. Carapace without thoracic groove (fig. 317), eight eyes on hardly elevated ocular area, AME almost as large as other eyes (fig. 317; smaller in type species, though not as small as illustrated by Simon, 1893b: fig. 487). Distance PME-ALE small (~ 30% of PME diameter). Male clypeus unmodified. Male sternum with small anterior humps (figs. 317–318). Male chelicerae frontally with pair of pointed apophyses, without stridulatory ridges. Male palpal coxa without retrolateral apophysis, femur without apophysis, tibia enlarged, procursus variable, but simple (figs. 322–323); bulb with dorsal embolar division and ventral spine (figs. 321, 324). Tarsal organ capsulate (figs. 73–74). Legs short (leg 1 about 2–3 × body length; tibia 1 l/d: 12–13), leg formula 4123; legs monochromous; without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 very distal (at 60–66%); tarsus with ~ 3–4 pseudosegments. Opisthosoma globular. Male gonopore with four epiandrous spigots (examined: *N. namibiae*, n. sp.: fig. 125), ALS with piriform gland spigots (examined: *N. namibiae*: fig. 152), other spinnerets typical for family.

Female very similar to male. Epigynum simple, of variable shape (figs. 329, 331); I could not find pore plates.

MONOPHYLY: The three species included share the spine ventrally on the bulb.

GENERIC RELATIONSHIPS: The genus may be close to some New World genera of short-legged pholcids with globular opisthosoma, without thoracic groove, and with capsulate tarsal organ with small opening (particularly *Nerudia*, which shares the bulbal spine; also *Gertschiola* and *Kambiwa* have ventral bulb apophyses that might be homologs to the spine in *Ninetis*). The genitalia in most of these genera, however, are quite distinct (except in *Nerudia*), and it is possible that the overall similarity (and the characters uniting these genera in the cladistic analysis) are adaptations to a similar environment (leaf litter and interstices in the soil structure). The close relationship of *Ninetis* with *Tolteca* suggested in the cladogram in appendix 2 is probably an artifact due to the poor resolution within ninetines as a result of insufficient data.



Map 2. Known distribution of the genus *Ninetis* Simon: *N. subtilissima* Simon (circle); *N. minuta* (Berland) (dark squares); *N. namibiae*, n. sp. (light square).

DISTRIBUTION/COMPOSITION: Three species described, from Yemen and Africa (Kenya, Tanzania, Namibia) (map 2).

Ninetis subtilissima Simon, 1890

Figures 310–314

Ninetis subtilissima Simon, 1890: 96. – Simon, 1893b: 486–487, figs. 487–489. – Bristowe, 1938: 310, figs. 2, 7.

TYPES: Eight syntypes (about four to five adult females, others juvenile), from Al Adan (Aden), Yemen; no date (E. Simon), in MNHN (10788); with Simon's handwritten label "10788 Ninet. subtilissima E.S. Aden!," examined. Simon's male specimen(s) could not be found in the MNHN.

DIAGNOSIS: Distinguished from *N. minuta* by the curved ventral spine on the bulb (in *N. minuta* it is straight) and the wider epigynum (compare figs. 313, 329); from *N. namibiae* by the thinner cheliceral apophyses (compare fig. 489 in Simon, 1893b, with fig. 325 herein); from both also by the short pointed procursus (fig. 488 in Simon, 1893b).

MALE (data from Simon, 1890, 1893b): Total length ~ 1–1.5, carapace without thoracic groove; chelicerae with pair of long, slightly diverging and distally hooked frontal apophyses; procursus very simple, pointed; bulb with curved ventral spine and simple embolar division. Opisthosoma globular.

The recently collected male confirms Simon's (1893b) drawings of chelicerae and procursus, but the bulbal spine is curved in the opposite direction, like in *N. namibiae* (cf. fig. 327).

FEMALE (syntype): Total length 1.0, carapace width 0.37, leg 1: 2.36 (0.67+0.13 +0.64+0.61+0.31), tibia 2: 0.56, tibia 3: 0.44, tibia 4: 0.72; tibia 1 l/d: 14. Entire animal pale ochre. Habitus similar to *N. minuta* (cf. fig. 315); the distinct dorsal hump shown in figs. 310–312 is an artifact (it is absent in the two recently collected females, and was not mentioned by Simon, 1890, 1893b). Eight eyes on hardly elevated ocular area, AME the smallest, but larger than illustrated by Simon (1893b: fig. 487) (fig. 310). Legs monochromous, most hairs missing; tarsus 1 with ~ 3 pseudosegments. Epigynum very simple externally, with distinct sclerotized arch on frontal plate (fig. 313); internally with roundish structure anteriorly and more complex folds posteriorly (fig. 314; I could not find pore plates.)

DISTRIBUTION: Known from two localities in Yemen (represented by a single dot in map 2).

MATERIAL EXAMINED: YEMEN: Al Adan (Aden): types above; Ja'ar, July 11, 1999 (A. van Harten), 1♂ 2♀ (deposition site not yet determined; a more detailed manuscript on this material is in preparation).

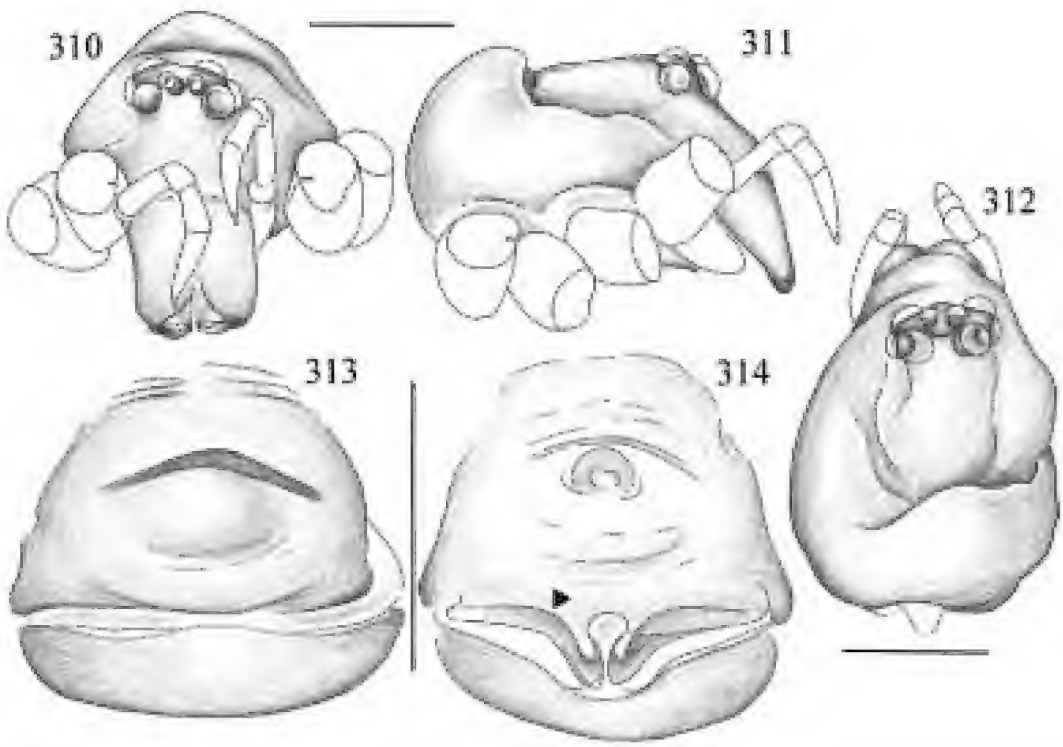
Ninetis minuta (Berland, 1919), new combination

Figures 315–322, 329–330

Myrmidonella minuta Berland, 1919: 349–350, figs. 8–9. – Berland, 1920: 126–128, figs. 146–149.

Ninetis sp. 2: Huber, 1998d: fig. 3k.

TYPE: Female holotype from Nairobi, Kenya; 1660 m elev., Nov. 19–22, 1911 (C. Al-



Figs. 310–314. *Ninetis subtilissima* Simon, female syntype. **310–312**. Prosoma, frontal, lateral, and dorsal views. **313**. Epigynum, ventral view. **314**. Epigynum, dorsal view (arrow points to internal sclerotized arch; cf. fig. 330). Scale lines: 0.2 mm.

laud & R. Jeannel), not examined (apparently lost).

DIAGNOSIS: Distinguished from *N. subtilissima* by the straight ventral spine on the bulb (fig. 321), and the narrower epigynum (fig. 329); from *N. namibiae* by the ribbon-shaped procursus (compare figs. 322–323), and the longer apophyses on the male chelicerae (compare figs. 315, 325).

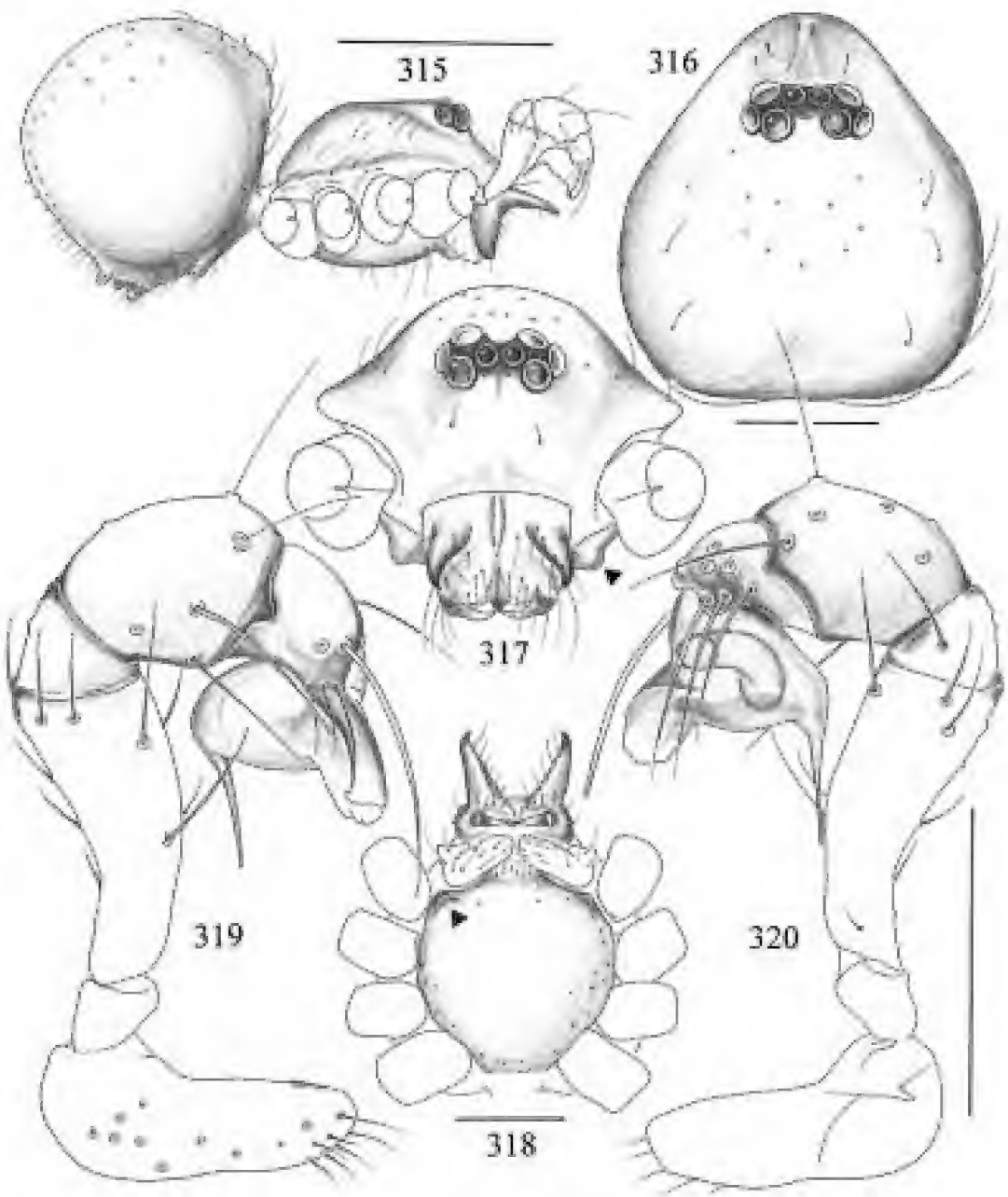
MALE (Kilifi, Kenya): Total length 0.99, carapace width 0.47; leg 1: 2.74 (0.81 +0.19+0.71+0.71+0.32), tibia 2: 0.61, tibia 3: 0.48, tibia 4: 0.74; tibia 1 l/d: 12. Habitus as in fig. 315; entire prosoma orange-ochre; carapace without thoracic groove (fig. 317); distance PME-ALE about 30% of PME diameter. Sternum with pair of small frontal humps (arrows in figs. 317–318); chelicerae with pair of long, slightly diverging and distally hooked frontal apophyses (figs. 317–318), without stridulatory ridges. Palps as in figs. 319–320, coxa without retrolateral apophysis, femur almost cylindrical, widened distally, tibia enlarged, procursus very simple, ribbon-shaped (figs. 319, 322), bulb as in figs. 319–321, with distinctive, almost translucent ventral spine and embolar division. Legs monochromous orange-ochre; without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 66%; tarsus 1 with ~ 3 pseudosegments. Opisthosoma globular, ochre-gray, without spots.

VARIATION: Tibia 1 in three males (Kilifi and Mkomazi): 0.74–0.82.

FEMALE (Kilifi, Kenya, and Mkomazi, Tanzania): Total length (N = 4) 1.31–1.40, tibia 1 (N = 5) 0.56–0.61. In general very similar to male, but sternum without humps. Epigynum simple flat plate (fig. 329); dorsal view as in fig. 330 (I could not find pore plates.)

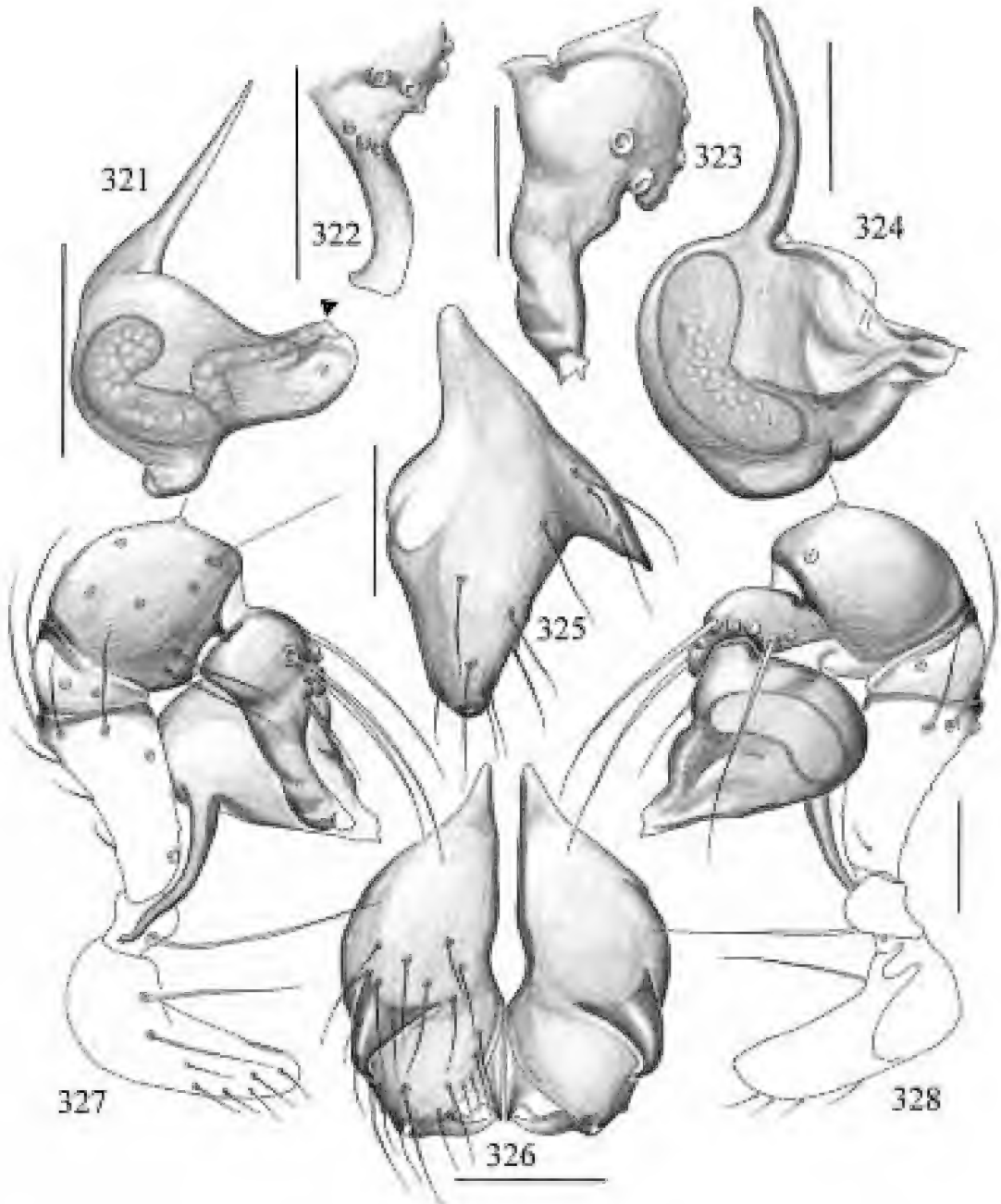
DISTRIBUTION: Known from three localities in Kenya and Tanzania (all localities are within a radius of about 230 km) (map 2).

MATERIAL EXAMINED: KENYA: *Kilifi*: Kil-

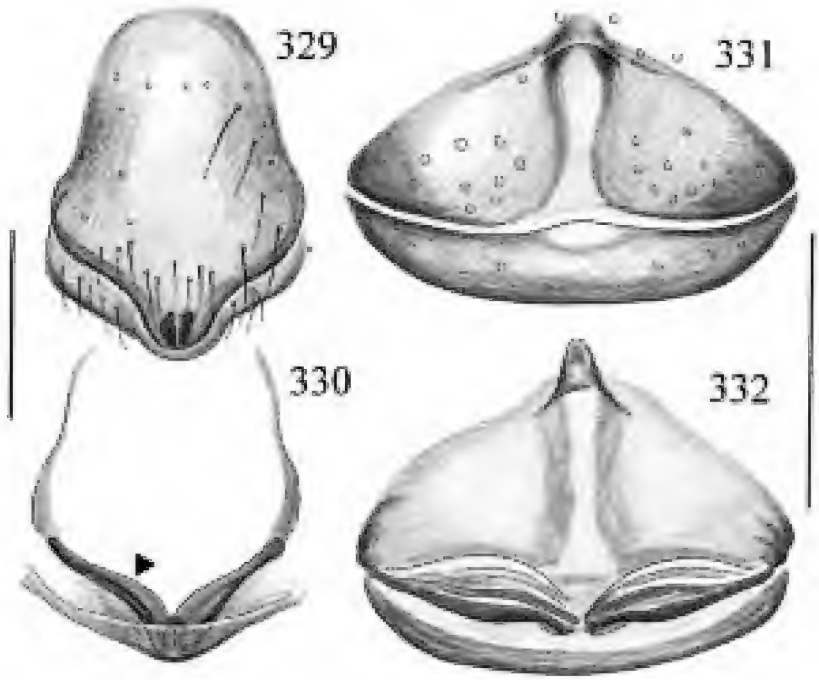


Figs. 315–320. *Ninetis minuta* (Berland), male. **315**. Habitus, lateral view. **316–318**. Prosoma, dorsal, frontal, and ventral views (arrows point to humps on sternum). **319**. Right palp, retrolateral view. **320**. Right palp, prolateral view. Scale lines: 0.5 mm (315), 0.2 mm (316–320).

ifi shore, leaf litter, Sept. 6, 1977 (J. A. Murphy), 2♂ 2♀ in AMNH; same data, 1♂ 2♀ in author's collection. TANZANIA: *Tanga*: Mkomazi Game Reserve, Ibaya, "hillside E of gulley, degraded bushland, 25 pitfall traps," Aug. 12–13, 1993 (M. Ritchie & R. Makusi), 1♂ in coll. A. Russell-Smith; same locality, "gulley on hill behind Ibeya Camp," Nov. 15, 1994 (no collector given), 1♂ 2♀ 1 juvenile in coll. A. Russell-Smith.



Figs. 321–328. *Ninetis* spp. from Africa. 321–322. *N. minuta* (Berland), male. **321**. Right genital bulb, prolateral view (arrow points to opening of sperm duct). **322**. Right procursus, retrolateral view. 323–328. *N. namibiae*, n. sp., male. **323**. Right procursus, retrolateral view. **324**. Right genital bulb, prolateral view. **325–326**. Chelicerae, lateral and frontal views. **327**. Right palp, retrolateral view. **328**. Right palp, prolateral view. Scale lines: 0.1 mm.



Figs. 329–332. *Ninetis* spp. from Africa. 329–330. *N. minuta* (Berland). **329**. Epigynum ventral view. **330**. Epigynum dorsal view (arrow points to internal sclerotized arch; cf. fig. 314). 331–332. *N. namibiae*, n. sp. **331**. Epigynum ventral view. **332**. Epigynum dorsal view. Scale lines: 0.2 mm.

Ninetis namibiae, new species

Figures 4, 125, 152, 323–328, 331–332

TYPES: Male holotype, 3♂ 5♀ paratypes from "UR Klein," Windhoek, Namibia; under stones, rocky hillside; Jan. 19, 1997 (A. Russell-Smith), in AMNH.

ETYMOLOGY: Named for the African country Namibia.

DIAGNOSIS: Distinguished from known congeners by the much larger procursus (compare figs. 322–323), from *N. minuta* also by the curved bulbal apophysis (compare figs. 321, 324), and the wider-than-long epigynum (compare figs. 329, 331); from *N. subtilissima* by the shorter and thicker cheliceral apophyses (compare fig. 325 with fig. 489 in Simon, 1893b), and the wider epigynum (compare figs. 313, 331).

MALE (holotype): Total length 1.25, carapace width 0.56; leg 1: 3.07 (0.84+0.19 +0.84+0.81+0.39), tibia 2: 0.71, tibia 3: 0.61, tibia 4: 0.94 (!); tibia 1 l/d: 13. Habitus and prosoma shape as in *N. minuta* (cf. figs. 315–318); entire prosoma ochre to light brown; carapace without thoracic groove, sternum with indistinct tiny frontal humps; chelicerae with pair of diverging, distally slightly hooked frontal apophyses, without stridulatory ridges (figs. 325–326). Palps as in figs. 327–328, coxa without retrolateral apophysis, femur almost cylindrical, widened distally, tibia enlarged, procursus as in fig. 323; tarsal organ capsulate; bulb with slightly curved, almost translucent ventral spine and short embolar division (fig. 324). Legs monochromous ochre-yellow; without spines, without curved and vertical hairs; retrolateral trichobothrium of leg 1 at 60%; tarsus 1 with ~ 3–4 pseudosegments. Opisthosoma gray, with darker spots dorsally, genital plate light brown, wide; gonopore with four epiandrous spigots (fig. 125); ALS with several piriform gland spigots (fig. 152).

FEMALE (paratypes): Total length (N = 4) 1.3–1.6, tibia 1 (N = 5) 0.61–0.71 ($\bar{x}$ = 0.68). In general very similar to male, but opisthosoma in all females monochromous gray. Epigynum simple flat plate, wider than long, with light median band ending frontally in pocket (fig. 331); dorsal view as in fig. 332 (I could not find pore plates).

DISTRIBUTION: Known only from type locality (map 2).

MATERIAL EXAMINED: NAMIBIA: Windhoek: types above; same collection data: 2♂ 2♀ in AMNH.

NERUDIA, NEW GENUS

TYPE SPECIES: *Nerudia atacama*, new species.

ETYMOLOGY: The generic name honors the Chilean poet and Nobel Prize winner Pablo Neruda. Gender feminine.

DIAGNOSIS: See Diagnosis of single species.

DESCRIPTION: See Description of single species.

GENERIC RELATIONSHIPS: The genus may be close to several other New World genera of short-legged pholcids with globular opisthosoma, especially with *Gertschiola* and *Kambiwa* with which it shares the ventral apophysis on the bulb (figs. 335, 338, 346, 353). Otherwise, however, the genitalia in these genera are quite distinct. The genus is very similar to the Old World genus *Ninetis*, but differs by the presence of stridulatory files on the male chelicerae.

DISTRIBUTION/COMPOSITION: Only type species, from Atacama, Chile.

Nerudia atacama, new species

Figures 333–337

TYPES: Male holotype, 3♀ paratypes, and one juvenile, from Huasco: Cuesta Pajonales, S Domeyko, Dept. Atacama, Chile; 1200 m elev., Oct. 5, 1992 (N. I. Platnick, P. Goloboff, K. Catley), in AMNH.

ETYMOLOGY: Named for the Chilean state Atacama. The specific name is a noun in apposition.

DIAGNOSIS: Tiny, short-legged pholcid with eight eyes, without thoracic groove, with globular opisthosoma; easily distinguished from other short-legged pholcids by the dorsally bent procursus and the two long bulbal projections (fig. 335); from *Ninetis* by the presence of stridulatory files on the chelicerae, from *Gertschiola* by the presence of cheliceral apophyses (compare figs. 333, 351), from *Kambiwa* by many details of the palps (compare figs. 335, 339).

MALE (holotype): Total length 1.39, carapace width 0.63; leg 1: 4.31 (1.16+0.19 +1.19+1.29+0.48), tibia 2: 1.03, tibia 3: 0.90, leg 4 missing; tibia 1 l/d: 16. Habitus as in *Guaranita goloboffi*, n. sp. (cf. fig. 367); entire prosoma light orange-ochre; carapace without thoracic groove; distance PME-ALE about 30% of PME diameter. Sternum with pair of small frontal humps; chelicerae with pair of frontal apophyses and stridulatory ridges laterally (fig. 333; the stridulatory pick is a modified hair proximally on palpal femur: fig. 334, shafted arrow). Palps as in figs. 334–335, coxa without retrolateral apophysis, femur almost cylindrical, widened distally, tibia globular, procursus simple, bent dorsally (fig. 335), bulb with two projections, one probably the embolus (arrow in fig. 335), the other a pointed apophysis. Legs orange-ochre, without rings; almost all hairs missing; retrolateral trichobothrium of tibia 1 at 67%; tarsus 1 with ~ 6 pseudosegments. Opisthosoma greenish-gray, dorsally covered with dark spots, ventrally pale.

FEMALE: Tibia 1 (N = 4) 1.23, 1.23, 1.23, 1.35. In general very similar to male, but sternum without anterior humps. Epigynum brown, as in fig. 336; dorsal view as in fig. 337.

VARIATION: The epigynum of one of the female paratypes (the female with the longest tibia 1) had a slightly different shape.

DISTRIBUTION: Known only from type locality.

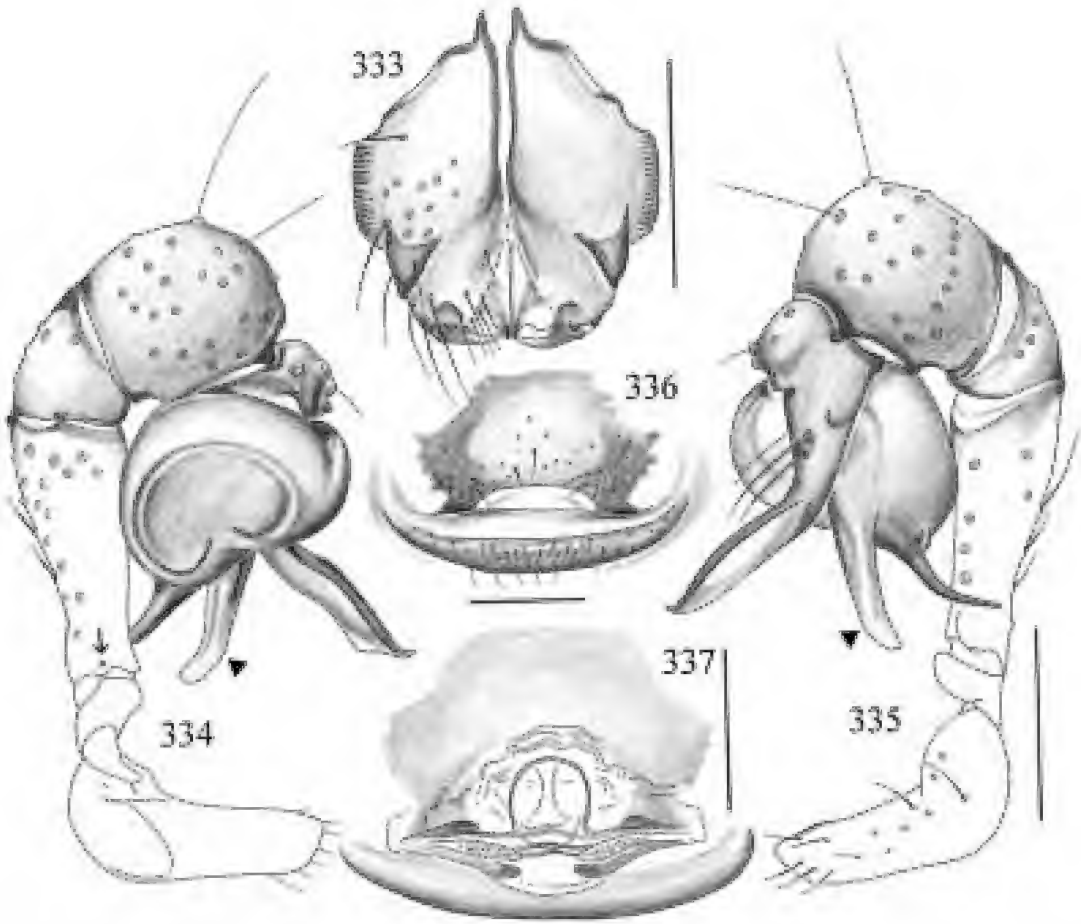
MATERIAL EXAMINED: CHILE: *Atacama*: Huasco: Cuesta Pajonales: types above; same collection data, but at 1080 m elev., 1♀ in AMNH.

KAMBIWA, NEW GENUS

TYPE SPECIES: *Ninetis neotropica* Kraus, 1957.

ETYMOLOGY: The generic name honors the Kambiwa people in the Brazilian state of Pernambuco. Since the 1940s, they are being displaced from their land by neo-Brazilian settlers and are being rapidly integrated into neo-Brazilian economy and society. Gender feminine.

NOTE: The synonymization of *Myrmidonella* Berland with *Ninetis* Simon above has



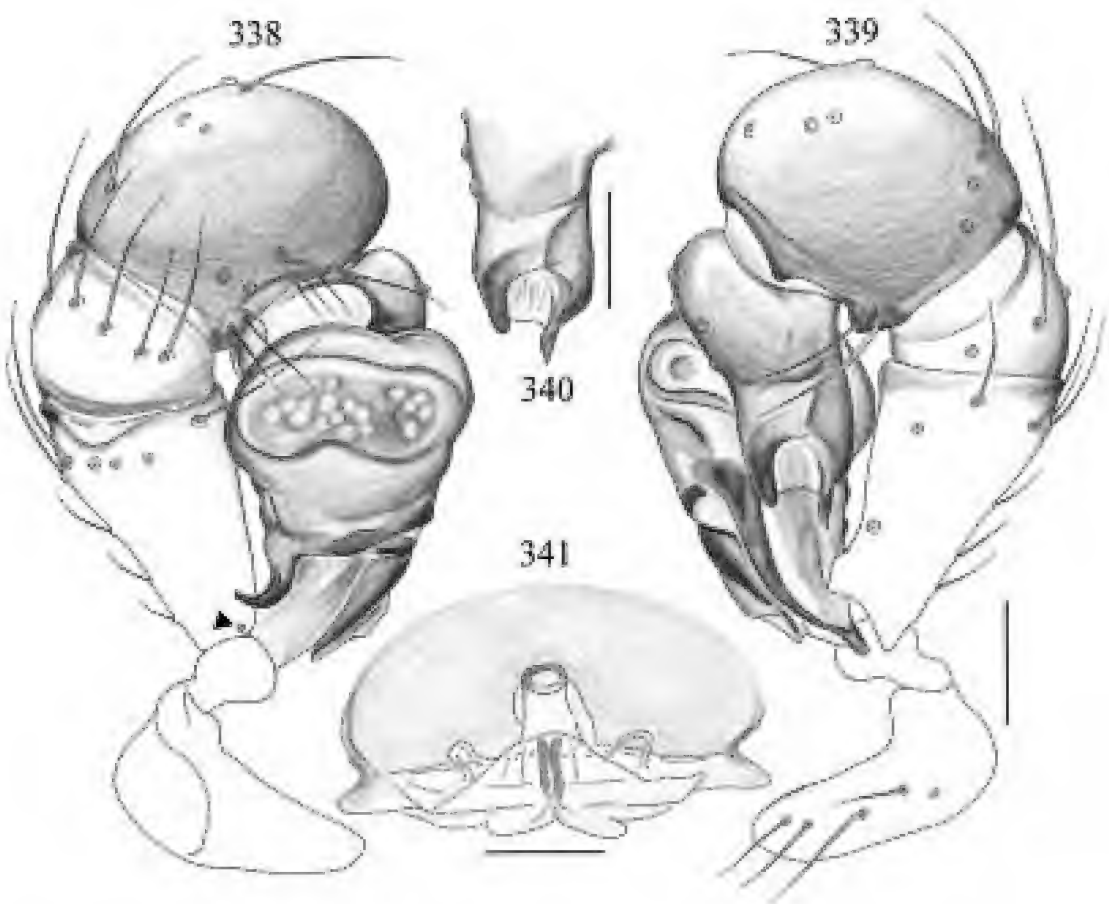
Figs. 333–337. *Nerudia atacama*, n. gen., n. sp. **333**. Male chelicerae, frontal view. **334**. Left male palp, prolateral view (shafted arrow points to stridulatory pick, other arrows in 334–335 point to putative embolus). **335**. Left male palp, retrolateral view. **336**. Epigynum, ventral view. **337**. Epigynum, dorsal view. Scale lines: 0.2 mm.

the consequence that the neotropical *Myrmidonella anomala* (Mello-Leitão, 1918) must be put in another genus too. However, the type specimen is apparently lost, and the original description just reveals that it might actually be a ninetine (1.5 mm female body length, eight eyes, carapace "quasi como o das aranhas do genero Scytodes," opisthosoma more or less globular). It could either follow the type species *Myrmidonella minuta* to the Old World genus *Ninetis*, or it could tentatively be assigned to a New World genus. I have chosen the second option, and in particular the genus *Kambiwa*, because the type locality of *Kambiwa neotropica* is just about 150 km from the type locality of *Myrmidonella anomala* (Campina Grande, Paraíba): *Kambiwa anomala* (Mello-Leitão, 1918), new combination. I must emphasize, however, that the assignment is highly speculative.

DIAGNOSIS: See Diagnosis of type species.

DESCRIPTION: See Description of type species.

GENERIC RELATIONSHIPS: The genus may be close to several other genera of short-legged pholcids with globular opisthosoma, especially with *Nerudia*, *Gertschiola*, and the Old World genus *Ninetis*. With these genera it shares the ventral apophysis on the bulb (fig. 338). Otherwise, however, the genitalia in these genera are quite different.



Figs. 338–341. *Kambiwa neotropica* (Kraus). **338**. Left male palp, prolateral view (arrow points to stridulatory pick). **339**. Left male palp, retrolateral view. **340**. Left procursus, retrolateral view. **341**. Epigynum, dorsal view. Scale lines: 0.1 mm.

DISTRIBUTION: Known only from northeastern Brazil.

Kambiwa neotropica (Kraus, 1957), new combination

Figures 338–341

Ninetis neotropica Kraus, 1957: 242–243, figs. 73–80.

TYPES: Male holotype (RII/6776a), 1♂ 4♀ paratypes (RII/6776b) from Recife, Pernambuco, Brazil; date and collector not given, in SMF (examined).

NOTE: Only one palp is left on the holotype. Both palps and the chelicerae of the male paratype are missing, as is the epigynum of one of the females.

DIAGNOSIS: Tiny, short-legged pholcid with eight eyes, without thoracic groove, with globular opisthosoma; distinguished from other short-legged pholcids by the short procursus with bifid ending (fig. 340), and by the hook-shaped apophysis ventrally on the male bulb (fig. 338). (A similar structure occurs in *Nerudia* and *Gertschiola*, but these genera differ in many other aspects of the palps and chelicerae.)

MALE (holotype; see also Kraus, 1957; most measurements copied from original description): Total length 1.3, carapace width 0.53; leg 1: 2.65 (0.75+0.17+0.67+0.67+0.37), tibia 2: 0.55, tibia 3: 0.52, tibia 4: 0.82; tibia 1 l/d: 9. Habitus as in *Aucana platnicki*, n. sp. (cf. fig. 395); distance PME-ALE about 20% of PME diameter. Carapace without thoracic groove, sternum without anterior humps. Chelicerae

with pair of anterior apophyses and lateral stridulatory ridges (see fig. 76 in Kraus, 1957). Palps as in figs. 338–339, stridulatory pick proximally on femur (arrow in fig. 338), tibia globular, bulb voluminous with distinct hooked apophysis (fig. 338); procursus as in fig. 340. Legs without spines, without curved and vertical hairs.

FEMALE (paratypes): In general very similar to male. Epigynum simple brown plate (see fig. 80 in Kraus, 1957); dorsal view as in fig. 341.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BRAZIL: *Pernambuco:* Recife: types above.

GERTSCHIOLA BRIGNOLI, 1981

Gertschiola Brignoli, 1981: 97–98 (type species by original designation *Physocyclus macrostylus* Mello-Leitão, 1941; examined).

DIAGNOSIS: Medium-sized (total length ~ 2 mm), eight-eyed pholcids with globular opisthosoma, relatively short legs, thin long procursus; distinguished from the similar *Ibotyporanga* by the armature of the male chelicerae (modified hairs instead of medially fused apophyses), and the tubular structure in the female internal genitalia (figs. 349, 354).

DESCRIPTION: Total length ~ 2 mm. Carapace monochromous, with shallow thoracic groove, eight eyes on moderately elevated ocular area, AME almost as large as other eyes. Distance PME-ALE small (~ 30–40% of PME diameter). Male clypeus unmodified. Male chelicerae frontally without apophyses, but with strong, distinctive hairs, with stridulatory ridges (figs. 344, 351). Male palps very long in relation to overall size (fig. 342); coxa without retrolateral apophysis, femur long and cylindrical, with small retrolateral apophysis proximally, procursus very long (figs. 346, 353); bulb with prolateroventral hooked apophysis and longer membranous element. Tarsal organ not examined. Legs relatively short (leg 1 about 4–5 × body length; tibia 1 l/d: 26–28), leg 1 always longest, leg 4 slightly longer than leg 2, leg 3 shortest; legs without dark rings; without spines, with curved hairs on metatarsi 1 and 2, few vertical hairs on tibiae and metatarsi (in *G. macrostyla* most hairs missing); retrolateral trichobothrium of tibia 1 extremely distal (at 72–73%); tarsus with ~ 7–9 pseudosegments. Opisthosoma globular, densely covered with dark spots. Male epigastric system and spinnerets not examined.

Female in general very similar to male. A tubular structure originates medially near entrance to uterus externus (figs. 349, 354).

MONOPHYLY: The two species included share details of the male chelicerae (modified hairs frontally on a bulge), and the tubular structure in the female internal genitalia.

GENERIC RELATIONSHIPS: *Gertschiola* appears to be very close to *Ibotyporanga*, with which it shares the long palp, the thin procursus, and especially the proximal part of it, which is characteristically bent in a ventral direction and then makes a turn. The two genera are also almost identical in habitus. On the other hand, *Gertschiola* shares with two other short-legged New World genera (*Nerudia*, *Kambiwa*) and with the Old World genus *Ninetis* the ventral apophysis on the male bulb (figs. 321, 324, 335, 338, 346, 353).

DISTRIBUTION/COMPOSITION: Two species described, from western Argentina.

Gertschiola macrostyla (Mello-Leitão, 1941)

Figures 342–350

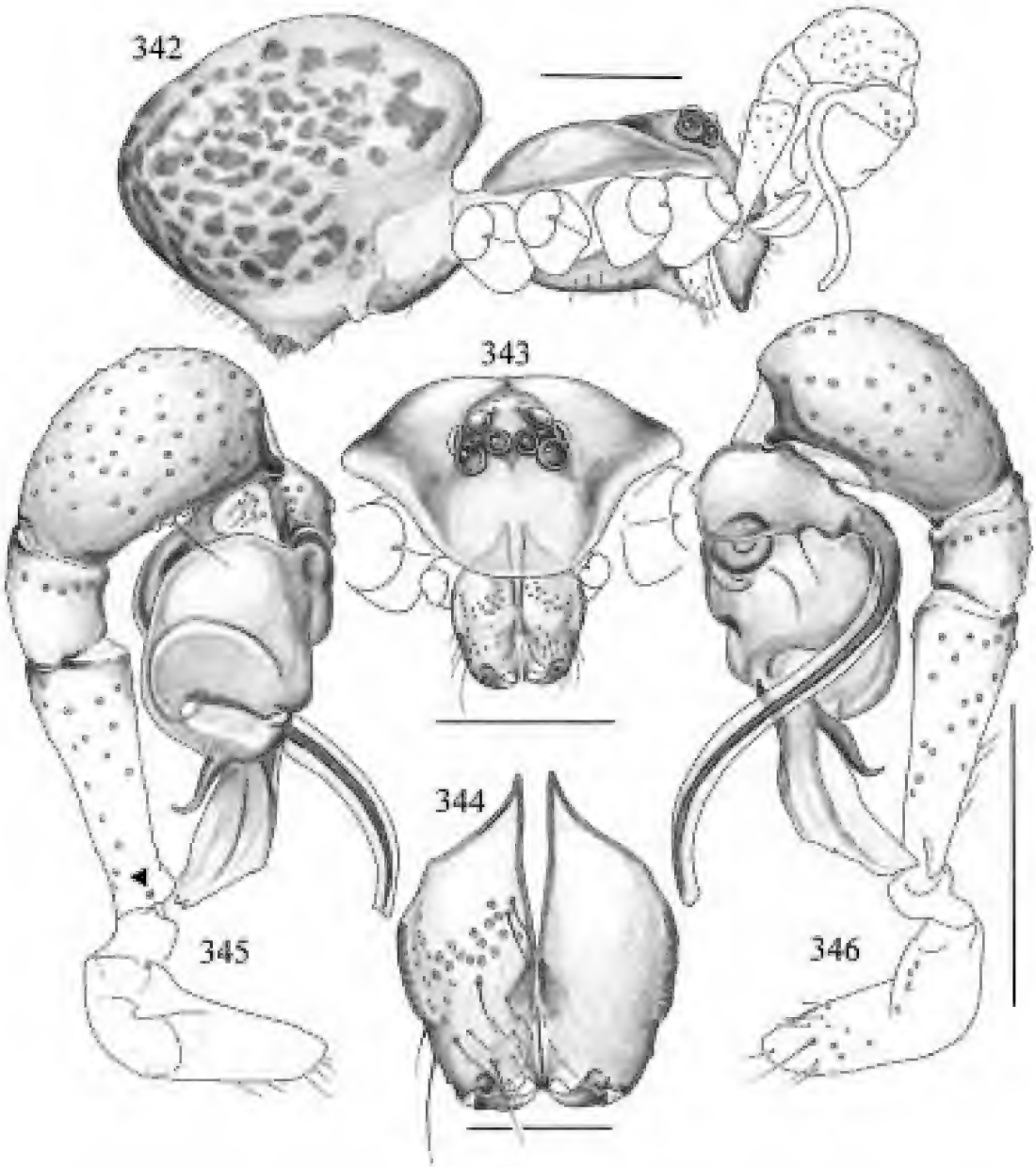
Physocyclus macrostylus Mello-Leitão, 1941: 110–111, figs. 8–9. – Brignoli, 1975: 36, fig. 2i.

Gertschiola macrostylus: Brignoli, 1981: 98–99, figs. 26–30.

TYPES: Male lectotype (designated by Brignoli, 1981), 1♂ (without palps) and 1♀ paralectotypes from Bañado, Tucumán, Argentina; no date (M. Birabén), in MLP (14630), examined.

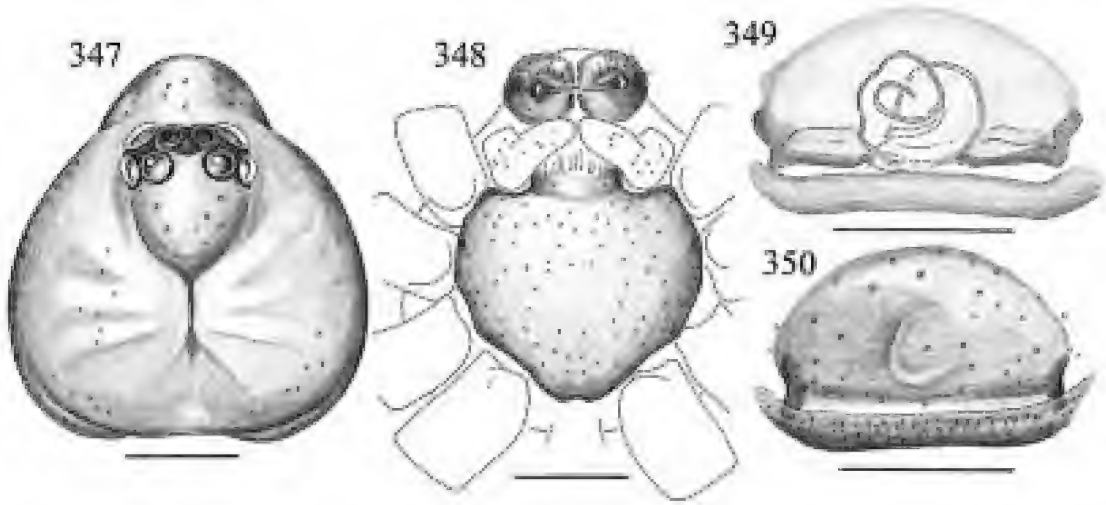
DIAGNOSIS: Distinguished from *G. neuquena*, n. sp., by the broader procursus (compare figs. 346, 353), and the much shorter tubular structure in the female internal genitalia (compare figs. 349, 354).

MALE (lectotype): Total length 2.1, carapace width 0.9; leg 1: 8.8 (2.2+0.4 +2.6+2.9+0.6), tibia 2: 2.1, tibia 3: 1.7, tibia 4: 2.4; tibia 1 l/d: 26. Habitus as in fig. 342; entire prosoma light brown, only cara-



Figs. 342–346. *Gertschiola macrostyla* (Mello-Leitão), male. **342**. Habitus, lateral view. **343**. Prosoma, frontal view. **344**. Chelicerae, frontal view. **345**. Left palp, prolateral view (arrow points to stridulatory pick). **346**. Left palp, retrolateral view. Scale lines: 0.5 mm (342–343, 345–346), 0.2 mm (344).

pace with darker Y mark dorsally; thoracic groove very shallow (fig. 343); eight eyes on slightly elevated ocular area (figs. 342–343); distance PME-ALE about 35% of PME diameter. Sternum without humps. Chelicerae with modified hairs (in the type material most hairs are missing, but the strong hair bases on the frontal humps suggest that there were modified hairs just as in the other material examined and in *G. neuquena*; cf. fig. 351), with stridulatory ridges laterally (fig. 344). Palps light brown, coxa without retro-



Figs. 347–350. *Gertschiola macrostyla* (Mello-Leitão), male and female paralectotypes. **347–348**. Male prosoma, dorsal and ventral views. **349**. Epigynum, dorsal view. **350**. Epigynum, ventral view. Scale lines: 0.3 mm.

lateral apophysis, femur proximally with stridulatory pick (modified hair) on prolateral side (arrow in fig. 345), inconspicuous apophysis on retrolateral side, tibia enlarged, procursus simple ribbon-shaped, S-curved apophysis (fig. 346), bulb with distinctive hooked apophysis and larger membranous embolar division (figs. 345–346). Legs ochre-yellow, no rings visible; without spines, without curved and vertical hairs (many hairs missing); retrolateral trichobothrium of tibia 1 at 72%; tarsus 1 with ~ 7–8 pseudosegments (difficult to see). Opisthosoma globular, ochre, covered with indistinct darker spots, except ventrally; genital plate large, light brown, about rectangular.

FEMALE (paralectotype): Carapace width 0.9. In general very similar to male. Epigynum simple plate (fig. 350), internally with median, transparent blind tube (fig. 349; receptacle?); I could not find pore plates.

DISTRIBUTION: Mello-Leitão (1941) had specimens from Tucumán (types), La Rioja, and Catamarca ("paratypes"). I have not seen the paratypes, but only material from Tucumán and Catamarca.

MATERIAL EXAMINED: ARGENTINA: *Tucumán:* Bañado: types above. *Catamarca*: Andalgalá, "pitfall trap, creosote bush desert," Feb. 27, 1973 (F. A. Enders), 5♂ in USNM; Joyango, 60 km S Andalgalá, Dec. 2, 1972 (F. A. Enders), 1♂ in USNM.

Gertschiola neuquena, new species

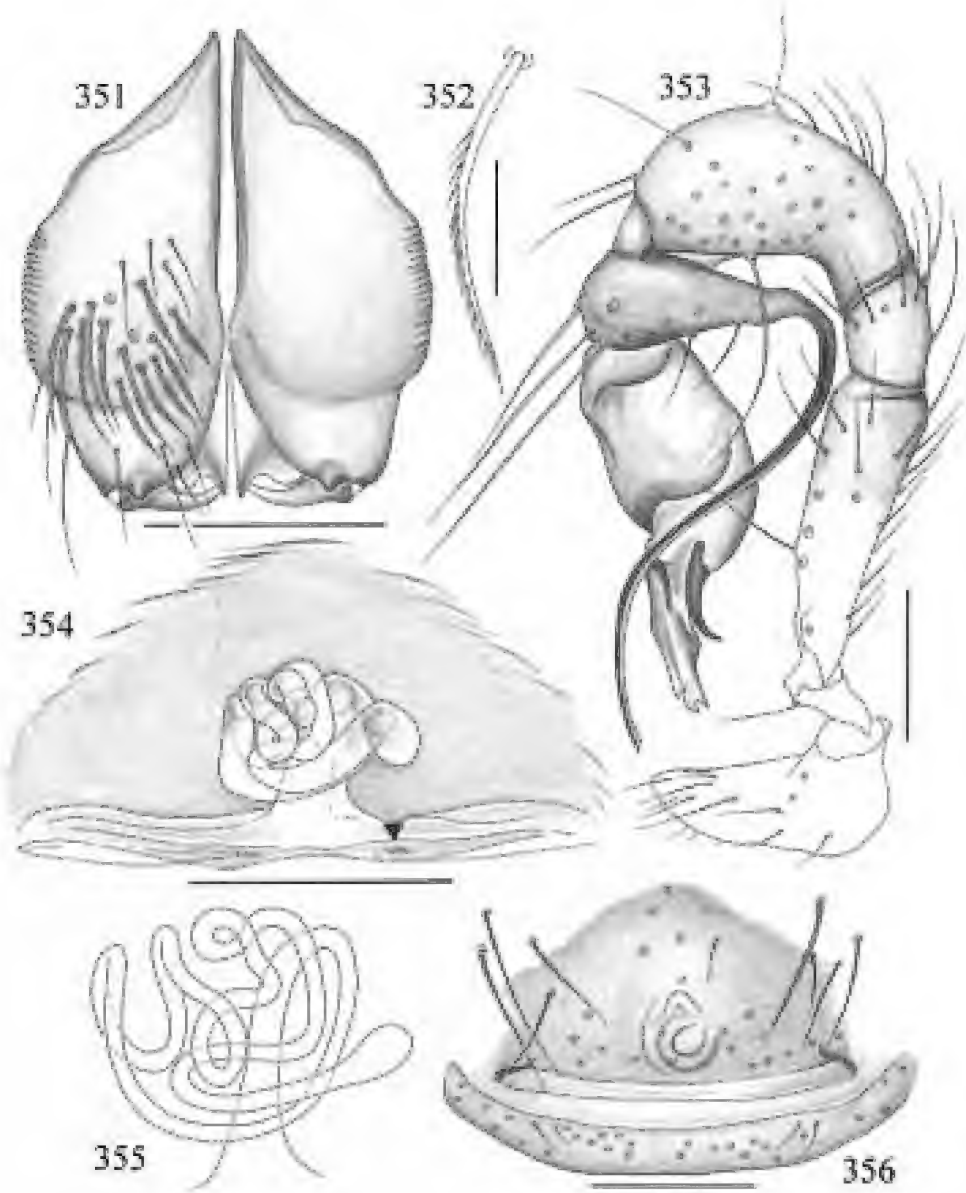
Figures 351–356

TYPE: Male holotype from Confluencia, Neuquén, Argentina; Feb. 1976 (O. de Ferrariis), in AMNH.

ETYMOLOGY: The species name is an adjective, derived from the Argentinean state Neuquén.

DIAGNOSIS: Distinguished from *G. macrostyla* by the narrower procursus (compare figs. 346, 353), and the much longer tubular structure in the female internal genitalia (compare figs. 349, 354).

MALE (holotype): Total length 2.0, carapace width 0.9; leg 1: 8.9 (2.3+0.3+2.6+2.9+0.8), tibia 2: 2.2, tibia 3: 1.8, tibia 4: 2.3; tibia 1 l/d: 28. Habitus as in *G. macrostyla* (cf. fig. 342); entire prosoma ochre, only carapace with darker median line; thoracic groove very shallow, eight eyes on slightly elevated ocular area; distance PME-ALE about 35% of PME diameter. Sternum without humps. Chelicerae with frontal humps that are set with modified hairs (figs. 351–352), with stridulatory ridges laterally. Palps ochre to light brown, coxa without re-



Figs. 351–356. *Gertschiola neuquena*, n. sp. **351**. Male chelicerae, frontal view. **352**. Modified hair on male chelicera. **353**. Left male palp, retrolateral view. **354**. Epigynum, dorsal view (arrow points to possible pore plate). **355**. Schematic representation of course of duct in female internal genitalia. **356**. Epigynum, ventral view. Scale lines: 0.2 mm (351, 353–354, 356), 0.05 mm (352).

trolateral apophysis, femur proximally with stridulatory pick (modified hair) on prolateral side, inconspicuous apophysis on retrolateral side, tibia enlarged, procursus simple but long, ribbon-shaped (fig. 353), bulb with distinctive hooked apophysis and larger membranous embolar division (fig. 353). Legs ochre-yellow, no rings visible; without spines, but with some slightly curved hairs on metatarsi 1 and 2, and some vertical hairs on tibiae and metatarsi; retrolateral trichobothrium of tibia 1 at 73%; tarsus 1 with ~ 9 pseudosegments (difficult to see). Opisthosoma globular (rather as illustrated for *Ibo-*

typoranga naideae, cf. fig. 357), greenish-ochre, covered with many darker spots, except ventrally.

FEMALE (Planicie Banderita): Very similar to male, but without curved hairs on legs. Carapace width 0.9; tibia 1: 1.9. Epigynum as in fig. 356; internal genitalia with long tubular structure (figs. 354–355).

VARIATION: Measurements of male from Planicie Banderita: carapace width 1.0; tibia 1: 3.5. Tibia 1 in the females from Loma de la Lata: 1.9, 2.1.

DISTRIBUTION: Known only from Neuquén, Argentina.

MATERIAL EXAMINED: ARGENTINA: *Neuquén*: Confluencia: type above. Planicie Banderita: Feb. 1, 1976 (Coscarón), 1♂ 1♀ in AMNH. Loma de la Lata, Jan. 1, 1973 (O. de Ferrariis), 2♀ 1 juvenile in AMNH. Loma de la Lata, Confluencia, Nov. 26, 1972 (O. de Ferrariis), 1 penultimate male in AMNH.

IBOTYPORANGA MELLO-LEITÃO, 1944

Ibotyporanga Mello-Leitão, 1944a: 6 (type species by original designation *Ibotyporanga naideae* Mello-Leitão, 1944; examined).

DIAGNOSIS/DESCRIPTION: See diagnosis and description of single known species below.

GENERIC RELATIONSHIPS: *Ibotyporanga* seems very close to *Gertschiola*, with which it shares the long thin procursus and especially the proximal part of it, which is characteristically bent in a ventral direction and then makes a turn. The two genera are also almost identical in habitus.

DISTRIBUTION: Widely distributed in central and northern Brazil.

Ibotyporanga naideae Mello-Leitão, 1944

Figures 38–39, 60, 78, 104, 109, 128, 174, 357–366

Ibotyporanga naideae Mello-Leitão, 1944a: 6–7.

TYPES: Four female syntypes from "Aurá," Pará, Brazil; no date (Leitão Carvalho), in MNRJ (1532), examined.

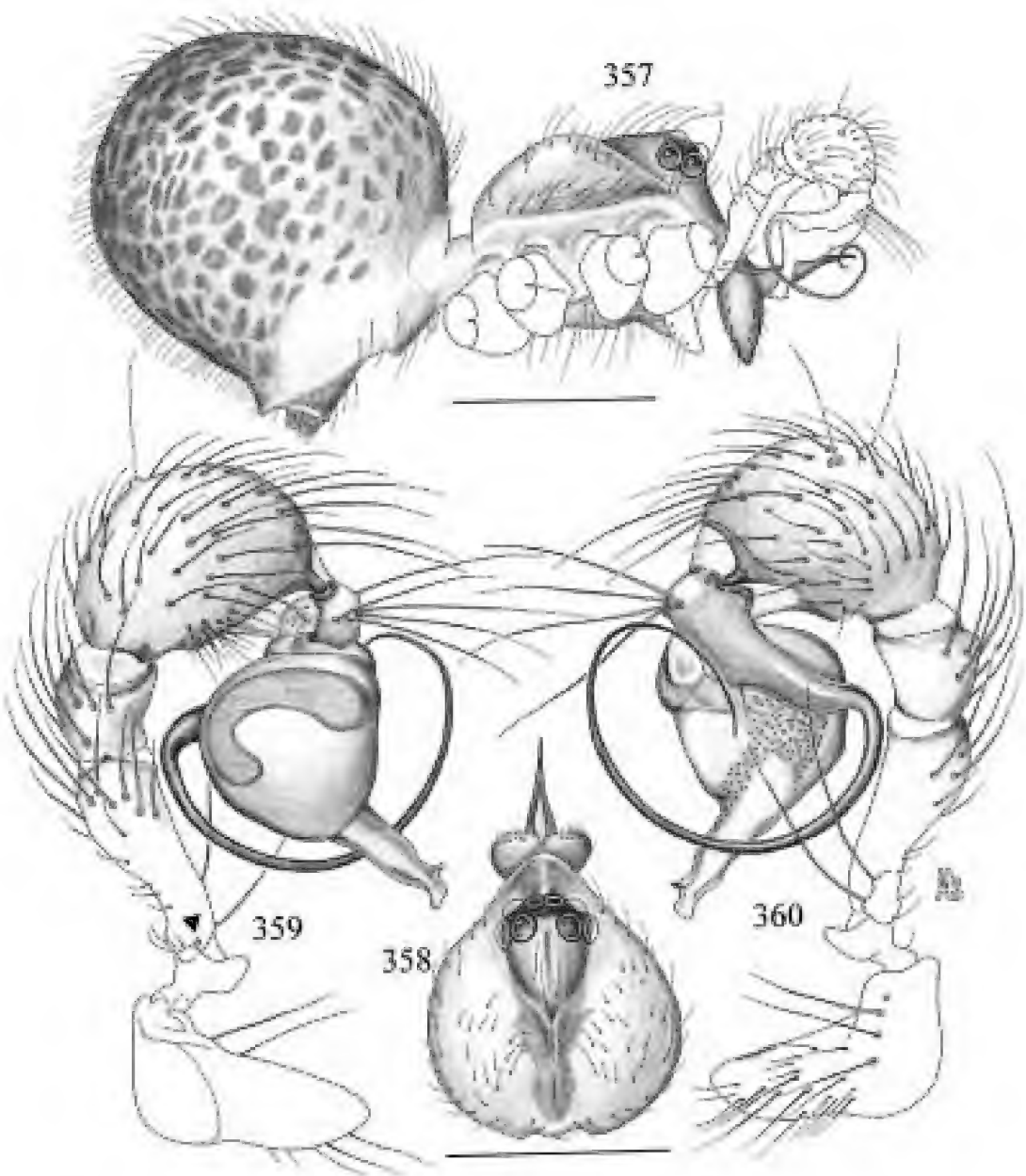
DIAGNOSIS: Medium-sized, short-legged pholcid with eight eyes, globular opisthosoma; easily distinguished from any other known pholcids (including the otherwise very similar genus *Gertschiola*) by the medially fused apophyses on the male chelicerae (fig. 358), and the curved, thin procursus describing a circle (fig. 360).

MALE (Porto Nacional): Total length 2.6, carapace width 1.2; leg 1: 7.7 (2.1+0.4 +2.0+2.6+0.6), tibia 2: 1.7, tibia 3: 1.4, tibia 4: 1.9; tibia 1 l/d: 13. Habitus as in fig. 357; carapace with shallow thoracic groove (as in female, fig. 365), ochre-yellow with brown median mark; eight eyes on slightly elevated, brown ocular area (figs. 357–358); distance PME-ALE about 30% of PME diameter. Clypeus brown, slightly more protruding than in female; sternum ochre-yellow, wider than long (0.80 versus 0.65). Chelicerae ochre-yellow to brown, with long median apophysis ending in small hook, and stridulatory files laterally (figs. 38, 358, 361). Palps ochre-yellow, only procursus blackish; coxa without retrolateral apophysis, femur proximally with stridulatory pick (modified hair; fig. 39, arrow in fig. 359) on prolateral side, prominent apophysis on retrolateral side (fig. 360), tibia enlarged, procursus simple but very long, describing circle, bulb with many small toothlike projections on prolateral side (figs. 60, 360). Tarsal organ capsulate with small opening (fig. 78). Legs ochre to light brown, with very distinct brown rings on femora subdistally and tibiae proximally and subdistally; legs without spines (femora with long stiff hairs ventrally; Mello-Leitão referred to these as *cerdas*, i.e., bristles) and curved hairs, with many vertical hairs on tibiae (fig. 109); retrolateral trichobothrium of tibia 1 at 56%; tarsus 1 with ~ 6–8 pseudosegments. Opisthosoma globular, greenish-gray, covered with dark spots, except ventrally; genital plate large, brown, about rectangular. ALS with only one piriform gland spigot each (fig. 174). Four epiandrous spigots in front of male gonopore (fig. 128).

FEMALE (syntypes): Carapace width (N = 4) 1.03–1.16; tibia 1 (N = 3) 1.61–1.77. In general very similar to male. Epigynum simple brown plate, internally with pair of transparent blind tubes laterally (fig. 364; receptacles?).

VARIATION (Porto Nacional): Tibia 1 in 7 males: 1.76–2.20 ($\bar{x}$ = 2.01); tibia 1 in 12 females: 1.84–2.23 ($\bar{x}$ = 2.00); total length in 8 females 2.67–3.60.

NOTE: In penultimate males the palps are



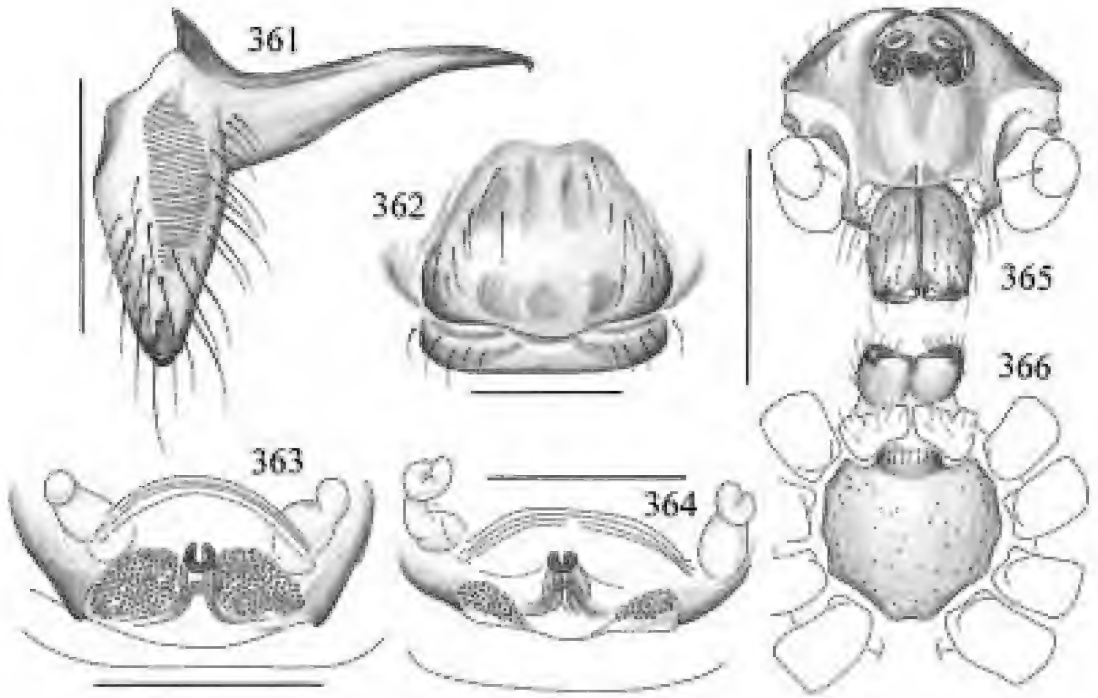
Figs. 357–360. *Ibotyporanga naideae* Mello-Leitão, male. **357**. Habitus, lateral view. **358**. Prosoma, dorsal view. **359**. Left palp, prolateral view (arrow points to stridulatory pick). **360**. Left palp, retrolateral view. Scale lines: 1.0 mm (357–358).

curiously enlarged and twisted, but the chelicerae show no sign of the developing apophysis.

DISTRIBUTION: Widely distributed in central and northern Brazil.

NATURAL HISTORY: At Tocantins, the spiders were collected on the old dry leaves that are still attached at the trunk of "Babaçu" (*Orbignya martiana*, Palmae), in the interior of a little wood of "Cerrado" (E. H. Buckup, personal commun.).

MATERIAL EXAMINED: BRAZIL: *Pará:*



Figs. 361–366. *Ibotyporanga naideae* Mello-Leitão. **361**. Male chelicerae, lateral view. **362**. Epigynum, ventral view. **363**. Epigynum of female from Porto Nacional, dorsal view. **364**. Epigynum of syntype, dorsal view. **365–366**. Prosoma of female syntype, frontal and ventral views. Scale lines: 1.0 mm (365–366), 0.4 mm (361–364).

"Aurá": types above; *Tocantins*: Porto Nacional, Nov. 10–13, 1992 (E. H. Buckup), 9♂ 12♀ 11 juveniles in MCN (28605); *Amazonas*: Manaus, Reserva Campina, Jan. 24, 1994 (A. D. Brescovit), 1♀ in MCN (25605); *Mato Grosso*: Poconé: Fazenda Sta. Ines, Aug. 4–10, 1992 (A. A. Lise & A. Braul), 2♀ in MCP (2587).

GUARANITA, NEW GENUS

TYPE SPECIES: *Guaranita goloboffi*, new species.

ETYMOLOGY: The generic name is derived from Guaraní, an Indian language spoken today by more than 2.5 million people in Bolivia, Paraguay, Argentina and Brazil. Gender feminine.

DIAGNOSIS: Tiny pholcids (total length ~ 1 mm), with short legs, globular opisthosoma, eight eyes; distinguished from other short-legged genera by the large flap dorsally on the procursus (arrows in figs. 374, 378, 380).

DESCRIPTION: Total length ~ 0.9–1.2 mm. Carapace without thoracic groove, ocular area hardly elevated, with eight eyes, AME only slightly smaller than others; distance PME-ALE small (~ 30% of PME diameter). Male clypeus unmodified. Male chelicerae with pair of long frontal apophyses, with few stridulatory ridges laterally (fig. 372). Male sternum with small anterior humps. Male palpal coxa without retrolateral apophysis, femur and tibia relatively short and enlarged, procursus with dorsal flap and dorsally bent distal elements; bulb with oblique distal apophysis; tarsal organ not examined. Legs very short (leg 1 about 2 × body length; tibia 1 l/d: 9–11), leg formula 4123; legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 very distal (at ~ 57–62%); tarsus 1 with only ~ 5–6 pseudosegments. Opisthosoma globular. Male epigastric system and spinnerets not examined.

Sexual dimorphism slight; epigynum ex-

tremely simple externally. I could not find pore plates.

MONOPHYLY: The three species included share details of the procursus (dorsal flap, distal elements bent dorsally), the shape of the bulb (with distal oblique apophysis), and have an indistinguishable epigynum (the female of *G. yaculica*, n. sp., is unknown).

GENERIC RELATIONSHIPS: The genus is probably close to several other genera of short-legged pholcids with globular opisthosoma (the tarsal organ has not been examined, but is predicted to be of ninetine type; cf. figs. 73–78). *Galapa* has a similar flap dorsally on the procursus (arrows in figs. 383, 387), but the bulb and chelicerae in *Galapa* are completely different from those in *Guaranita*. Otherwise, the generic relationships are obscure.

DISTRIBUTION/COMPOSITION: Three described species, from northern Argentina and southern Brazil.

Guaranita goloboffi, new species

Figures 367–377

TYPES: Male holotype, 2♀ paratypes from Rio India Muerta, Camino a Ticucho, Tucumán, Argentina; Jan. 21, 1995 (P. Goloboff), in MACN.

ETYMOLOGY: Named for the collector.

DIAGNOSIS: Distinguished from *G. yaculica*, n. sp., and *G. munda* (Gertsch) by the smaller dorsal flap on the procursus (compare figs. 374, 378, 380).

MALE (holotype): Total length 0.92, carapace width 0.42; leg 1: 1.98 (0.53+0.16 +0.49+0.47+0.33), tibia 2: 0.40, tibia 3: 0.35, tibia 4: 0.61; tibia 1 l/d: 9. Habitus as in fig. 367; entire prosoma pale ochre-yellow; carapace without thoracic groove (fig. 369); distance PME-ALE about 30% of PME diameter; sternum with pair of small frontal humps (figs. 369, 373); chelicerae with pair of long, distally hooked, frontal apophyses, and few stridulatory ridges laterally (fig. 372, stridulatory pick is a modified hair proximally on palpal femur: arrow in fig. 371); palp as in figs. 370–371, coxa without retrolateral apophysis, femur almost cylindrical, widened distally, tibia globular, procursus distally curved, with dorsal flap (figs. 370, 374), bulb as in figs. 371, 375. Legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 57%; tarsus 1 with ~ 5 pseudosegments. Opisthosoma greenish-gray, dorsally covered with large dark spots; ventrally pale, with slightly darker, short but wide genital plate.

VARIATION: Tibia 1 in male from El Hongo: 0.51.

FEMALE (paratypes and females from El Hongo): Total length (N = 6) 1.03–1.33, tibia 1 (N = 7) 0.52–0.56. In general very similar to male, but sternum without humps. Epigynum very light brown, simple flat plate (fig. 377); dorsal view as in fig. 376. I could not find pore plates.

DISTRIBUTION: Known from two localities in Tucumán and Salta, Argentina.

MATERIAL EXAMINED: ARGENTINA: *Tucumán*: Rio India Muerta: types above; *Salta*: El Hongo, 6 km S Alemania, Apr. 19, 1995 (P. Goloboff), 1♂ 5♀ in MACN.

Guaranita yaculica, new species

Figure 378

TYPE: Male holotype from Aguas Blancas-Yaculica (22°43′S, 64°24′W), Salta, Argentina; 520 m elev., "Yungas forest (young 2° forest), leaf litter, Winkler sample," Oct. 25, 1994 (J. M. Carpenter & D. Agosti), in AMNH.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from *G. goloboffi*, n. sp., and *G munda* (Gertsch) by the large roundish dorsal flap on the procursus (arrow in fig. 378).

MALE (holotype): Total length 1.00, carapace width 0.43; leg 1: 2.16 (0.62+0.15 +0.59+0.56+0.24), tibia 2: 0.48, tibia 3: 0.44, tibia 4 missing; tibia 1 l/d: 11. Habitus and details of prosoma as in *G. goloboffi* (cf. figs. 367–369); distance PME-ALE about 30% of PME diameter. Entire prosoma orange-ochre; opisthosoma greenish-gray with large blackish spots dorsally; sternum with pair of small frontal humps as in *G. goloboffi* (cf. fig. 373); chelicerae as in *G. goloboffi* (cf. fig. 372); palp in general as in *G. goloboffi*, only procursus significantly different, with larger dorsal flap and slightly different

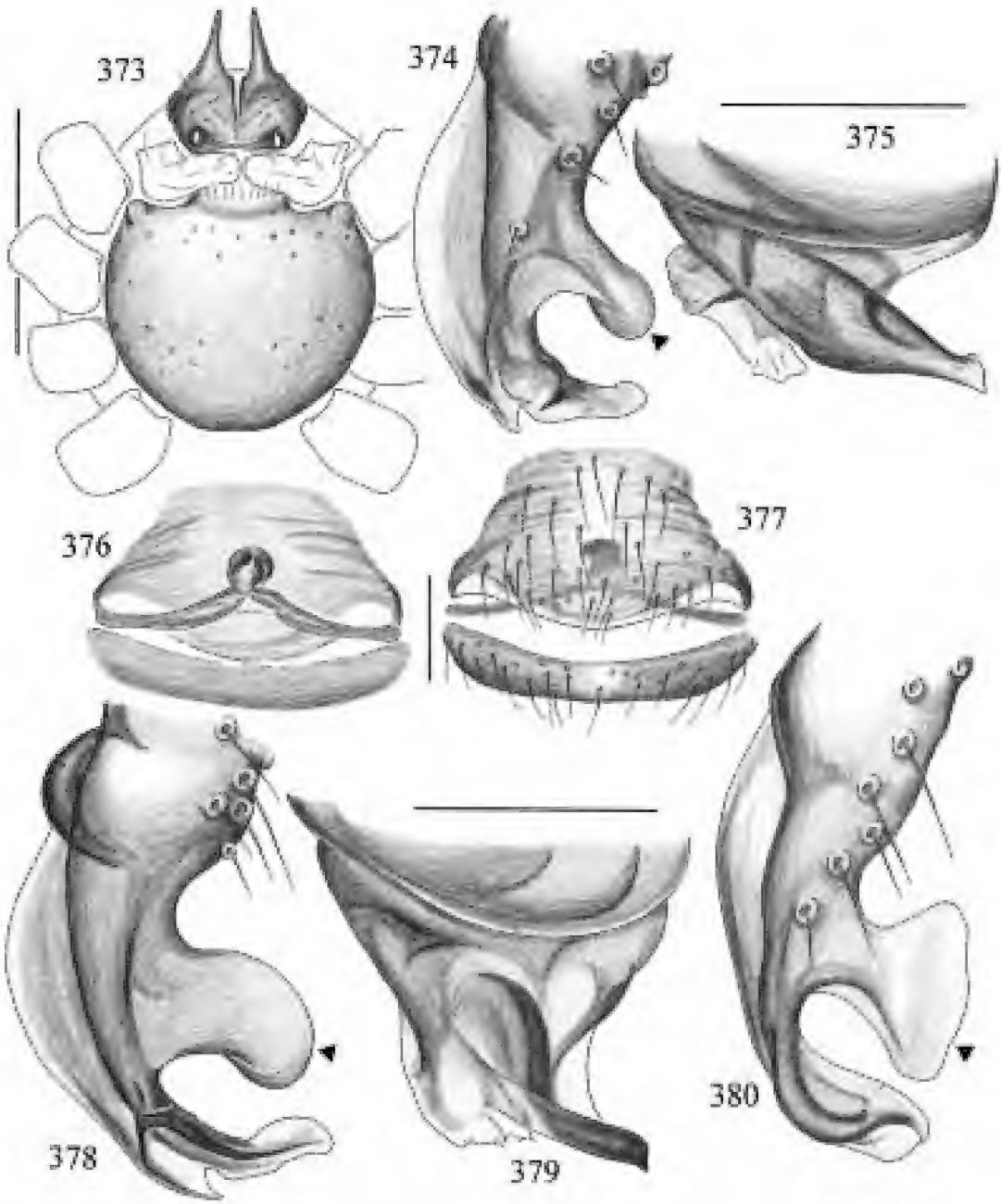
Figs. 367–372. *Guaranita goloboffi*, n. gen., n. sp., male. **367**. Habitus, lateral view. **368–369**. Prosoma, dorsal and dorsofrontal views. **370**. Right palp, retrolateral view. **371**. Right palp, prolateral view (arrow points to stridulatory pick). **372**. Chelicerae, lateral view. Scale lines: 0.5 mm (367), 0.3 mm (368–369), 0.1 mm (370–372).

distal sclerites (fig. 378). Legs without spines, without curved and vertical hairs; tarsus 1 with ~ 5 pseudosegments.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: ARGENTINA: *Salta*: Aguas Blancas-Yaculica: type above.



Figs. 373–380. *Guaranita* spp. 373–377. *G. goloboffi*, n. gen., n. sp. **373**. Male prosoma, ventral view. **374**. Right procursus, retrolateral view. **375**. Bulbal projections (right bulb), prolateral view. **376**. Epigynum, dorsal view. **377**. Epigynum, ventral view. **378**. *G. yaculica*, n. gen., n. sp., right procursus, retrolateral view. 379–380. *G. munda* (Gertsch). **379**. Bulbal projections (right bulb), prolateral view. **380**. Right procursus, retrolateral view. Arrows point to distinctive dorsal flaps. Scale lines: 0.3 mm (373), 0.1 mm (374–380).

Guaranita munda (Gertsch, 1982), new combination

Figures 379–380

Pholcophora munda Gertsch, 1982: 104, figs. 31–33, 42–44.

TYPE: Male holotype, 1♀ paratype from Cerro Colorado, Dept. Catamarca, Argentina (not Nuevo León, Mexico; see Note below); from leaf litter (*hojarasca*), Oct. 14, 1961 (O. de Ferrariis), in AMNH (examined).

NOTE: The label reads "Crro Colorado, Cta., 14. X - 61, Col: O. de Ferrariis." There is no reasonable doubt that this is not the Cerro Colorado in Nuevo León (Mexico), but in Catamarca (Argentina): first, "Cta." obviously stands for Catamarca; second, conspecific material and two very close relatives are now known from Argentina and southern Brazil (*G. goloboffi*, n. sp.; *G. yaculica*, n. sp.); third, the only other material collected by O. de Ferrariis I have seen was also from Argentina (the type of *Gertschiola neuquena*).

DIAGNOSIS: Distinguished from *G. goloboffi* and *G. yaculica* by the large T-shaped dorsal flap on the procursus (arrow in fig. 380), and the slightly different embolar division (compare figs. 375, 379).

MALE (holotype): Total length 1.16, carapace width 0.45; leg 1: 2.15 (0.61+0.16 +0.58+0.48+0.32), tibia 2: 0.47, tibia 3 missing, tibia 4: 0.65; tibia 1 l/d: 10. Habitus and details of prosoma as in *G. goloboffi* (cf. figs. 367–369); distance PME-ALE about 30% of PME diameter. Entire prosoma ochre-yellow; opisthosoma monochromous gray; sternum with pair of small frontal humps as in *G. goloboffi* (cf. fig. 373); chelicerae as in *G. goloboffi* (cf. fig. 372); palp in general as in *G. goloboffi*, only procursus significantly different, with large, T-shaped dorsal flap and slightly different distal sclerites (fig. 380), and bulb with longer embolar division and less tapering distal apophysis (fig. 379). Legs without rings; probably without spines, without curved and vertical hairs (most hairs missing); retrolateral trichobothrium of tibia 1 at 62%; tarsus 1 with 5–6 pseudosegments.

FEMALE (paratype): Total length 1.42, carapace width 0.49. In general very similar to male; all legs missing. Epigynum apparently not distinguishable from *G. goloboffi* (cf. figs. 376–377).

DISTRIBUTION: Known from northern Argentina and southern Brazil.

MATERIAL EXAMINED: ARGENTINA: *Catamarca*: Cerro Colorado: types above. BRAZIL: *Rio Grande do Sul*: Quarái: Estancia São Roberto, May 24–28, 1991 (A. D. Brescovit), 1♂ 2♀ in MCN (21206, 21111).

GALAPA, NEW GENUS

TYPE SPECIES: *Pholcophora baerti* Gertsch and Peck, 1992.

ETYMOLOGY: The generic name refers to the Galápagos Islands. Gender feminine.

DIAGNOSIS: Tiny pholcids (total length 1–1.5 mm), without thoracic groove, with short legs, globular opisthosoma, eight eyes; distinguished from other short-legged genera by the apophyses on the male cheliceral fangs (figs. 30, 384) and the procursus with dorsal apophysis and retrolateral pointed protrusion (figs. 383, 387).

DESCRIPTION: Total length ~ 1–1.5 mm. Carapace without thoracic groove; ocular area hardly elevated, with eight eyes, AME only slightly smaller than others; distance PME-ALE about 40% of PME diameter. Male clypeus unmodified. Male chelicerae with pair of apophyses basally on fangs, with stridulatory ridges laterally (fig. 384). Male sternum without humps. Male palpal coxa without retrolateral apophysis, femur relatively short, procursus with dorsal apophysis (arrows in figs. 383, 387) and retrolateral pointed protrusion; bulb very large, embolar division with sclerotized and unsclerotized elements; tarsal organ capsulate with small opening (examined: *G. baerti*: figs. 76–77). Legs very short (leg 1 about 2–2.5 × body length; tibia 1 l/d: 9–12), leg formula 4123; legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 very distal (at ~ 65%); tarsus 1 with only ~ 5 pseudosegments. Opisthosoma globular. Male gonopore apparently with four epiandrous spigots (examined: *G. baerti*: fig. 127); ALS with piriform gland spigots (examined: *G. baerti*), other spinnerets typical for family.

Sexual dimorphism slight; epigynum ex-

tremely simple externally; I could not find pore plates.

MONOPHYLY: The two species included share the apophyses on the male cheliceral fangs and details of the procursus (dorsal apophysis, retrolateral spine).

GENERIC RELATIONSHIPS: The genus may be close to several other genera of short-legged pholcids with globular opisthosoma and ninetine tarsal organ. *Galapa* shares with *Guaranita* the dorsal apophysis ("flap") on the procursus, but the bulbs and chelicerae in these genera differ strongly. The extraordinary similarity of the apophyses on the male cheliceral fangs in *Galapa* and *Blancoa* (compare figs. 30, 32) is probably a result of convergent evolution.

DISTRIBUTION/COMPOSITION: Two described species, from the Galápagos Islands. Note that "*Anopsicus*" *banksi* (Gertsch) from the Galápagos Islands is not closely related, and is probably not even a ninetine (see appendix 3).

Galapa baerti (Gertsch and Peck, 1992), new combination

Figures 30, 76–77, 127, 385–388

Pholcophora baerti Gertsch and Peck, 1992: 1190–1191, figs. 37–40.

TYPE: Male holotype from Bucanero Cove, Santiago, Galápagos Islands, Ecuador; 5–10 m elev., Apr. 9, 1982 (L. Baert, J. P. Maelfait), in IRBS (examined).

DIAGNOSIS: Distinguished from *G. bella* (Gertsch and Peck) by the relatively much smaller bulb (compare figs. 381, 385), and details of the procursus (in particular the position of the retrolateral spine, compare figs. 383, 387). The females of the two species are apparently indistinguishable.

MALE (holotype; see also Gertsch and Peck, 1992): Total length 1.46, carapace width 0.60; leg 1 missing, tibia 2: 0.63, tibia 3: 0.57, tibia 4: 0.85. Habitus in general as in *Guaranita goloboffi*, n. sp. (cf. fig. 367); distance PME-ALE about 40% of PME diameter. Entire prosoma pale ochre-yellow, sternum pale whitish, without anterior humps. Chelicerae as in *G. bella* (cf. fig. 384), with apophyses originating from fangs, and stridulatory ridges. Palps as in figs. 385–386, stridulatory pick proximally on femur (arrow in fig. 385), procursus with retrolateral spine and dorsal apophysis (fig. 387). Tarsal organ capsulate, elevated (fig. 77). Legs light brown; without spines, without curved and vertical hairs. Opisthosoma dorsally covered with blackish spots, heart-mark and ventral side pale greenish-gray; gonopore apparently with four epiandrous spigots (fig. 127); ALS with piriform gland spigots.

Measurements of another male (type locality): leg 1: 2.72 (0.76+0.20+0.69+0.75 +0.32), tibia 2: 0.61; tibia 1 l/d: 9, retrolateral trichobothrium of tibia 1 at 66%; tarsus 1 with ~ 5 pseudosegments.

VARIATION: Tibia 1 in 9 males: 0.68–0.73 ($\bar{x}$ = 0.71).

FEMALE: Tibia 1 (N = 16) 0.61–0.74 ($\bar{x}$ = 0.67). In general very similar to male. Epigynum simple, light brown plate with two dark brown transverse lines posteriorly. Dorsal view as in fig. 388; I could not find pore plates.

DISTRIBUTION: Known from Santiago and possibly some other islands (see Remark below) on the Galápagos Islands.

MATERIAL EXAMINED (all in IRBS, collected by L. Baert and J. P. Maelfait): GALAPAGOS ISLANDS: *Santiago*: Bucanero Cove: type above, and 3♂ 8♀ same data; same locality, Apr. 6, 1982, 1♂ 5♀; same locality, but at 30–50 m elev., Apr. 6, 1982, 4♂ 14♀; Cerro Cowan, 260 m elev., Apr. 7, 1982, 1♂ 1♀ 1 juvenile.

The following material is assigned tentatively (see Remark below): *Santa Fé*: 50–100 m, Apr. 1–2, 1982, 1♀; *Venezia*: 2 m elev., Apr. 18, 1982, 1♀; *Pinta*: littoral zone, Mar. 21, 1986, 4♀ and 1♀(?) prosoma.

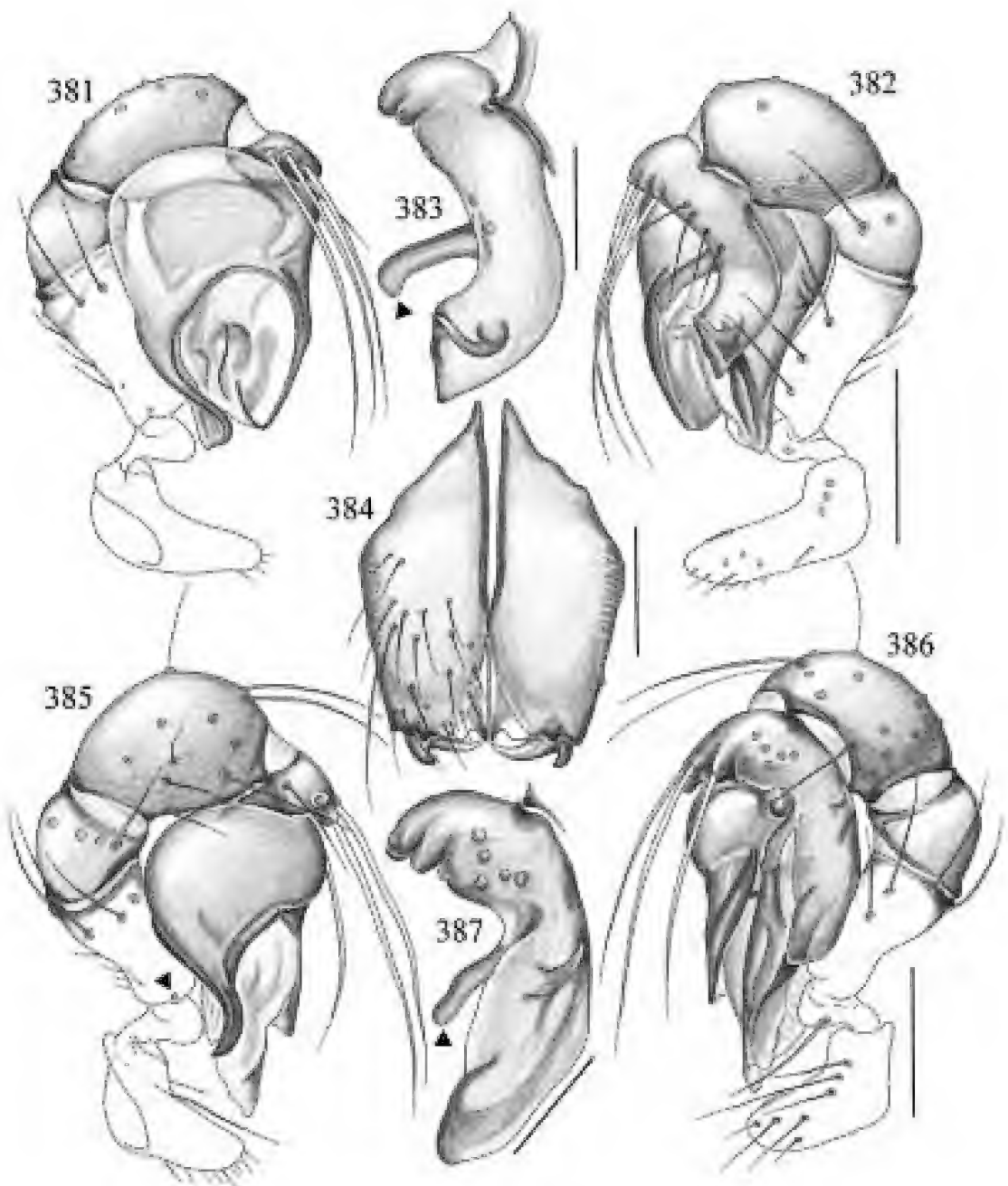
REMARK: Since the females of *G. baerti* and *G. bella* appear indistinguishable, the three vials above containing only females cannot be assigned unambiguously to one of the two species.

Galapa bella (Gertsch and Peck, 1992), new combination

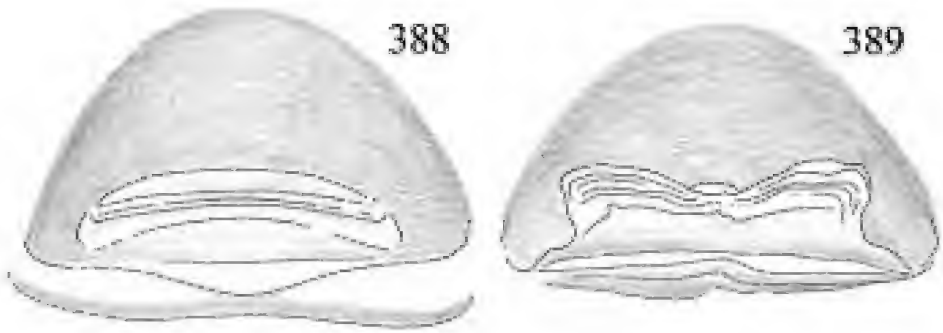
Figures 381–384, 389

Pholcophora bella Gertsch and Peck, 1992: 1190, figs. 32–36.

TYPES: Male holotype, 2♀ and one juvenile from Darwin Research Station, Academy Bay, Santa Cruz, Galápagos Islands, Ec-



Figs. 381–387. *Galapa* spp. 381–384. *G. bella* (Gertsch), male holotype. **381**. Left palp, prolateral view. **382**. Left palp, retrolateral view. **383**. Left procursus, retrolateral view. **384**. Chelicerae, frontal view. 385–387. *G. baerti* (Gertsch). **385**. Left palp, prolateral view. **386**. Left palp, retrolateral view. **387**. Left procursus, retrolateral view. Arrows point to stridulatory pick (385), and to dorsal apophyses (383, 387). Scale lines: 0.2 mm (381–382, 385–386), 0.1 mm (383–384, 387).



Figs. 388–389. *Galapa* spp., epigyna, dorsal views. **388**. *G. baerti* (Gertsch). **389**. *G. bella* (Gertsch).

uador; Feb. 12, 1964 (D. Q. Cavagnora, R. O. Schuster), in CAS (examined).

DIAGNOSIS: Closely related to *G. baerti*, distinguished by the relatively much larger bulb (compare figs. 381, 385), and details of the procursus (in particular the position of the retrolateral spine, compare figs. 383, 387). The females of the two species are apparently indistinguishable.

MALE (holotype; see also Gertsch and Peck, 1992): Total length 1.05, carapace width 0.53; leg 1: 2.76 (0.74+0.19+0.74 +0.77+0.32), tibia 2: 0.65, tibia 3: 0.61, tibia 4: 0.84; tibia 1 l/d: 12. Habitus in general as in *Guaranita goloboffi*, n. sp. (cf. fig. 367); distance PME-ALE about 40% of PME diameter. Entire prosoma and legs ochre-yellow; carapace without thoracic groove, sternum without humps. Chelicerae with apophyses originating from fangs, and stridulatory ridges laterally (fig. 384). Palps as in figs. 381–382, stridulatory pick proximally on femur as in *G. baerti*, procursus with retrolateral spine and dorsal apophysis (fig. 383). Legs without rings; without spines, without curved and vertical hairs; tarsus 1 with ~ 5 pseudosegments. Opisthosoma ochre-gray, slightly darker dorsally.

FEMALE (N = 2): Total length 1.1; tibia 1: 0.65, 0.68. In general very similar to male. Epigynum simple, light brown plate; dorsal view as in fig. 389; I could not find pore plates.

DISTRIBUTION: Known only from type locality (see Remark below).

MATERIAL EXAMINED: GALAPAGOS ISLANDS: *Santa Cruz*: male holotype, and 2♀ 1 juvenile above.

REMARK: Three vials containing females only were tentatively assigned to *G. baerti*, but might as well be females of the present species.

ENETEA, NEW GENUS

TYPE SPECIES: *Enetea apatellata*, new species

ETYMOLOGY: The generic name honors the Yuracaré (also called Enetes), an Indian people living in the departments of Beni and Cochabamba in Bolivia. They largely resisted the efforts of missionaries, and today preserve a strong sense of ethnic identity. Gender feminine.

DIAGNOSIS/DESCRIPTION: See diagnosis and description of single species below.

GENERIC RELATIONSHIPS: The genus may be close to several other genera of short-legged pholcids with globular opisthosoma and stridulatory files on the male chelicerae (e.g., *Aucana*, *Kambiwa*). However, the genitalia in these genera are quite distinct, and most or all similarities may be plesiomorphies.

DISTRIBUTION/COMPOSITION: Only type species, from Beni, Bolivia.

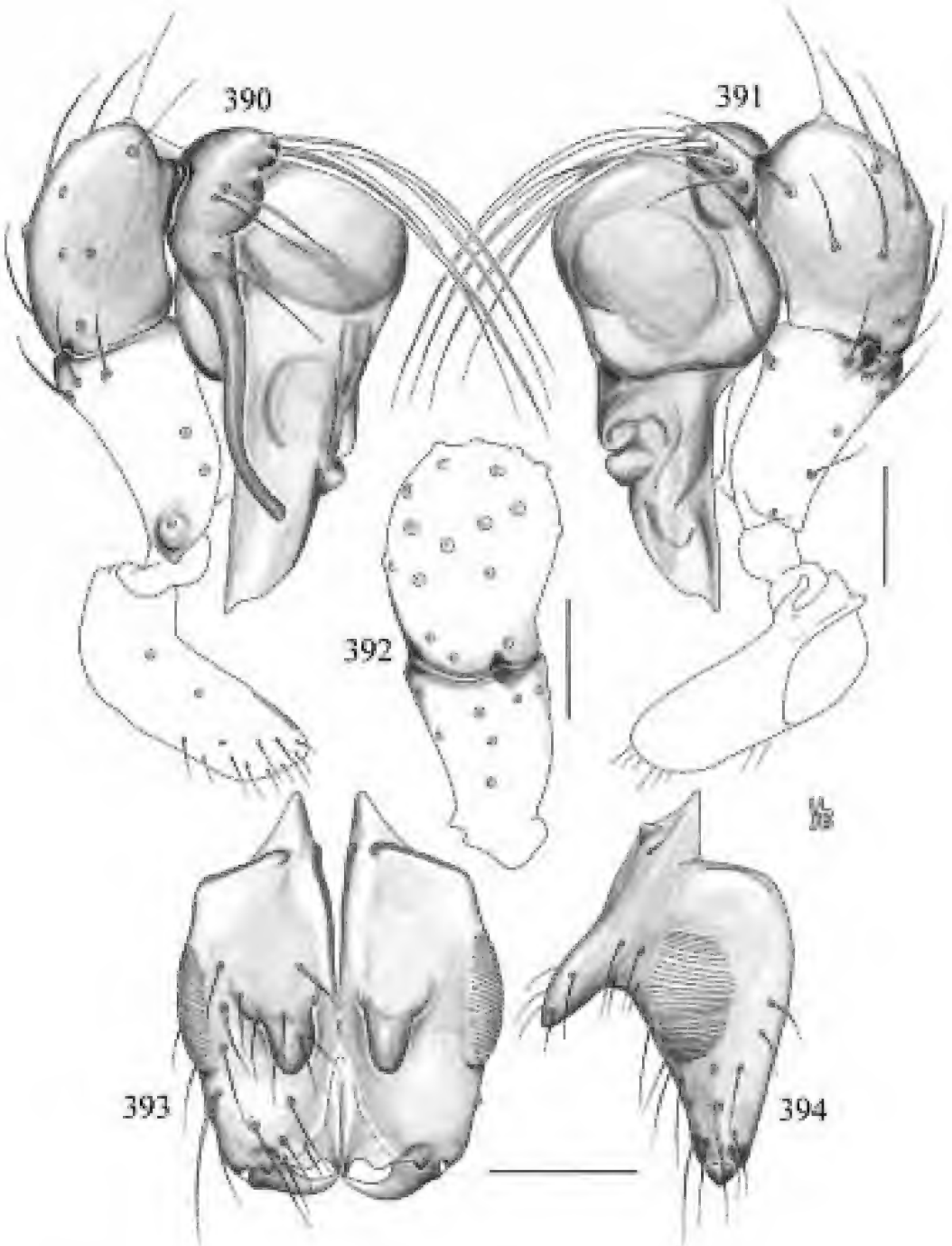
Enetea apatellata, new species

Figures 390–394

"Bolivian pholcid, I.D. #6": Huber, 1999: fig. 19.

TYPE: Male holotype from El Trapiche, Estación Biologica de Beni, Dept. Beni, Bolivia; July 27–29, 1993 (A. D. Brescovit), in MCN.

ETYMOLOGY: The species name is an adjective referring to the missing patella in the male palp.



Figs. 390–394. *Enetea apatellata*, n. gen., n. sp., male holotype. **390**. Right palp, retrolateral view. **391**. Right palp, prolateral view. **392**. Palpal femur and tibia, dorsal view. **393–394**. Chelicerae, frontal and lateral views. Scale lines: 0.1 mm.

DIAGNOSIS: Tiny, short-legged pholcid with eight eyes, without thoracic groove, with globular opisthosoma; easily distinguished from other short-legged pholcids (and any other known pholcid) by the missing male palpal patella (figs. 390–392). Further distinguished by the ribbon-shaped, slightly curved procursus (fig. 390) and the pair of large frontal apophyses on the male chelicerae (figs. 393–394).

MALE (holotype): Total length 1.19, carapace width 0.53; leg 1: (0.71+0.21+0.63 +0.63, tarsus missing), tibia 2: 0.52, tibia 3: 0.45, tibia 4: 0.66; tibia 1 l/d: 9. Habitus and prosoma shape as in *Ninetis minuta* (cf. figs. 315–317), humps on sternum slightly more posterior and smaller; distance PME-ALE about 30% of PME diameter. Entire prosoma orange-ochre; chelicerae with pair of frontal apophyses and stridulatory files laterally (figs. 393–394). Palps as in figs. 390–391, coxa without retrolateral apophysis, femur proximally with stridulatory pick (modified hair) on prolateral side, and small protrusion on retrolateral side; femur directly articulating with tibia (dicondylous joint), patella completely absent (fig. 392); procursus simple, ribbon-shaped, and slightly curved (fig. 390), bulb large, without any apparent apophyses (figs. 390–391). Legs monochromous orange-ochre; without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 57%. Opisthosoma ochre, covered dorsally with blackish spots.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BOLIVIA: *Beni*: El Trapiche: type above.

AUCANA, NEW GENUS

TYPE SPECIES: *Aucana platnicki*, new species.

ETYMOLOGY: The generic name is derived from the Incan word *Auca*, referring to the unconquered Indians living between the Maipó and Bío-Bío rivers in Chile. More recently the term describes Araucanian Indians living mostly in Argentina.

DIAGNOSIS: Tiny pholcids (total length 1.1–1.4 mm), with short legs, globular opisthosoma, eight eyes; distinguished from other short-legged genera by the several small frontal apophyses on the male chelicerae (other South American ninetines have either one pair: *Nerudia*, *Kambiwa*, *Guaranita*, *Enetea*; or none: *Gertschiola*, *Galapa*), and the dorsal apophysis proximally on the simple procursus (figs. 403, 407, 411, 417, 426).

DESCRIPTION: Total length ~ 1.1–1.4 mm. Carapace without thoracic groove. Ocular area not or hardly elevated, with eight eyes, AME smallest; distance PME-ALE relatively small (~ 30–40% of PME diameter). Male clypeus unmodified. Male chelicerae with some small, cone-shaped apophyses frontally, with stridulatory ridges laterally. Male sternum without humps. Male palpal coxa without retrolateral apophysis, femur widened distally, procursus simple, usually with transparent lamellae distally, with dorsal apophysis or projection proximally; bulb large, variable in shape; tarsal organ exposed (examined: *A. platnicki*, n. sp.; *kaala*, n. sp.; figs. 85–87). Legs very short (leg 1 about 3–3.5 × body length; tibia 1 l/d: 15–17), leg formula usually 1423 (in *A. kaala* legs 1 and 4 subequal); legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 distal (at ~ 50–60%); tarsus with only ~ 5–8 pseudosegments. Opisthosoma globular, with darker spots dorsally. Male gonopore without epiandrous spigots (examined: *A. platnicki*: fig. 133; *kaala*). ALS with piriform gland spigots (examined: *A. platnicki*, *kaala*; figs. 156–157), other spinnerets typical for family.

Sexual dimorphism slight; epigynum extremely simple externally, internally with circular median structure (figs. 405, 409, 413; receptacle?).

MONOPHYLY: The species included share the dorsal projection on the procursus. The Chilean species are extremely similar overall, and very probably form a monophyletic group. The New Caledonian species is included tentatively. It has similar procursi and chelicerae, and further similarities that are otherwise rare among short-legged pholcids: the absence of epiandrous spigots and exposed tarsal organs.

GENERIC RELATIONSHIPS: The genus may be close to several other genera of short-legged pholcids with globular opisthosoma and stridulatory files on the male chelicerae, es-

pecially with the North American genus *Chisosa*, which shares the exposed tarsal organ and the absence of epiandrous spigots. All other ninetine characters (short legs, distal retrolateral trichobothrium, carapace without thoracic indentation, small size) may be plesiomorphies.

SPECIFIC RELATIONSHIPS: The type species as well as *A. ramirezi*, n. sp., and *A. petorca*, n. sp., have very similar procursi and identical male chelicerae. *A. paposo*, n. sp., differs in several aspects (bulb, procursus a simple, ribbon-shaped structure). *A. kaala* shows more pronounced differences in procursus and bulb, and has additional apophyses proximally on the male chelicerae; it is assigned tentatively (see Monophyly above).

DISTRIBUTION: Known from Chile and New Caledonia.

COMPOSITION: The genus as construed here includes five named species, all of which are newly described below. Apart from that I have seen at least three further species from New Caledonia (in AMNH, QMB).

Aucana platnicki, new species

Figures 17, 44, 85–86, 133, 157, 395–405

TYPES: Male holotype, 6♂ 11♀ paratypes from Choapa: Nague, 10 km N Los Vilos, km 236, Rt 5 (31°50′S, 71°31′W), Coquimbo, Chile; elev. 40 m, Nov. 13, 1993 (N. I. Platnick, K. Catley, M. Ramirez, R. T. Allen), in AMNH.

ETYMOLOGY: Named for the principal collector of the type material.

DIAGNOSIS: Distinguished from the closely related *A. ramirezi* by the straighter procursus (compare figs. 403, 407), from *A. petorca* by the stronger tip and proximal apophysis of the procursus (compare figs. 403, 411); from other congeners also by the three tiny cones frontally on the male chelicerae (fig. 400).

MALE (holotype): Total length 1.35, carapace width 0.61; leg 1: 4.06 (1.03+0.19 +1.13+1.23+0.48), tibia 2: 0.81, tibia 3: 0.68, tibia 4: 1.03; tibia 1 l/d: 17. Habitus as in fig. 395. Entire prosoma orange to light brown, only carapace slightly darker medially; no thoracic groove (fig. 397), distance PME-ALE about 35% of PME diameter. Sternum without anterior humps. Chelicerae light brown, with stridulatory ridges laterally (pick is a modified hair proximally on palpal femur), and three pairs of tiny black cones frontally (fig. 400). Palps as in figs. 398–399, coxa without retrolateral apophysis, femur proximally with retrolateral apophysis; procursus with proximal apophysis, and black, slightly bent distal tip (figs. 402–403); tarsal organ exposed (fig. 86); bulb large, with several short distal elements (figs. 398–399). Legs monochromous orange-ochre, with very faint darker rings on femora and tibiae (subdistally), each followed by lighter tips; legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 59%; tarsus 1 with ~ 5–6 pseudosegments. Opisthosoma ochre, covered dorsally with blackish spots; without epiandrous spigots (fig. 133), ALS with piriform gland spigots (fig. 157).

VARIATION: Tibia 1 in 9 males: 0.97–1.16 ($\bar{x}$ = 1.09). In the single male from Bío-Bío the proximal apophysis on the procursus is less well developed. For this reason, and because of the geographic distance to the type locality, the specimen is assigned tentatively to the species.

FEMALE: Total length (N = 11) 1.2–1.7 ($\bar{x}$ = 1.4); tibia 1 (N = 10) 1.00–1.10 ($\bar{x}$ = 1.05). In general very similar to male. Epigynum light brown, very simple externally (fig. 404); internally with transparent median sac (receptacle?) (fig. 405).

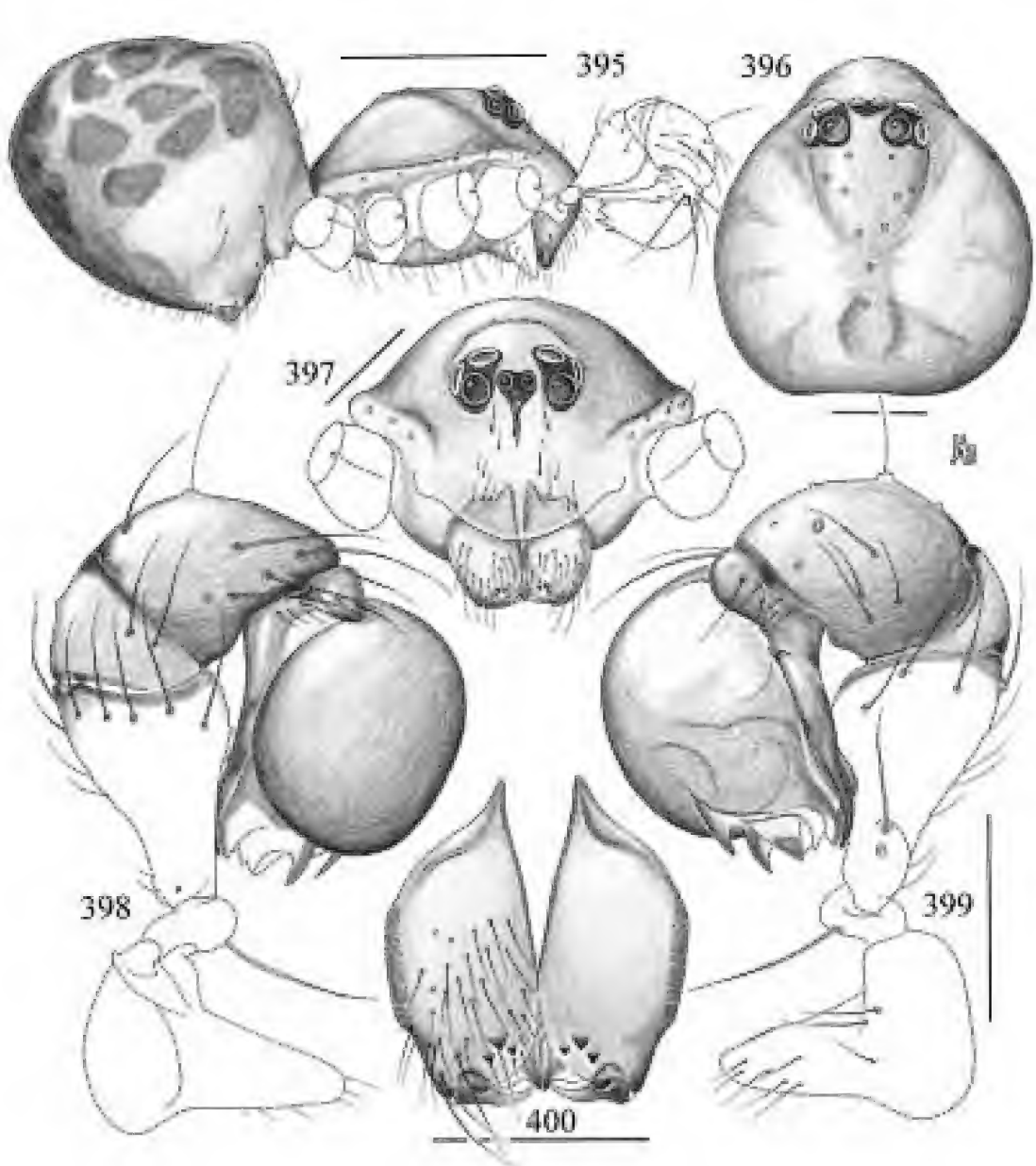
DISTRIBUTION: Known from Coquimbo and Valparaiso (Chile) (and maybe Bío-Bío, see above).

MATERIAL EXAMINED: CHILE: *Coquimbo*: Choapa: Nague: types above; Nague, Sept. 26, 1980 (L. E. Peña), 1♂ in AMNH; *Valparaiso*: Viña del Mar, Apr. 1979 (A. Tobar), 3♂ 1♀ in AMNH; *Bío-Bío*: Arauco: Pata de Gallina, elev. 560 m, Feb. 11, 1992 (N. I. Platnick, P. Goloboff, M. Ramirez), 1♂ in AMNH (tentatively assigned; see above).

Aucana ramirezi, new species

Figures 406–409

TYPES: Male holotype, 4♂ 9♀ paratypes from Elqui: 20 km N La Serena, km 491, Rt 5 (29°46′S, 71°20′W), Coquimbo, Chile; elev. 120 m, Nov. 12, 1993 (N. I. Platnick,



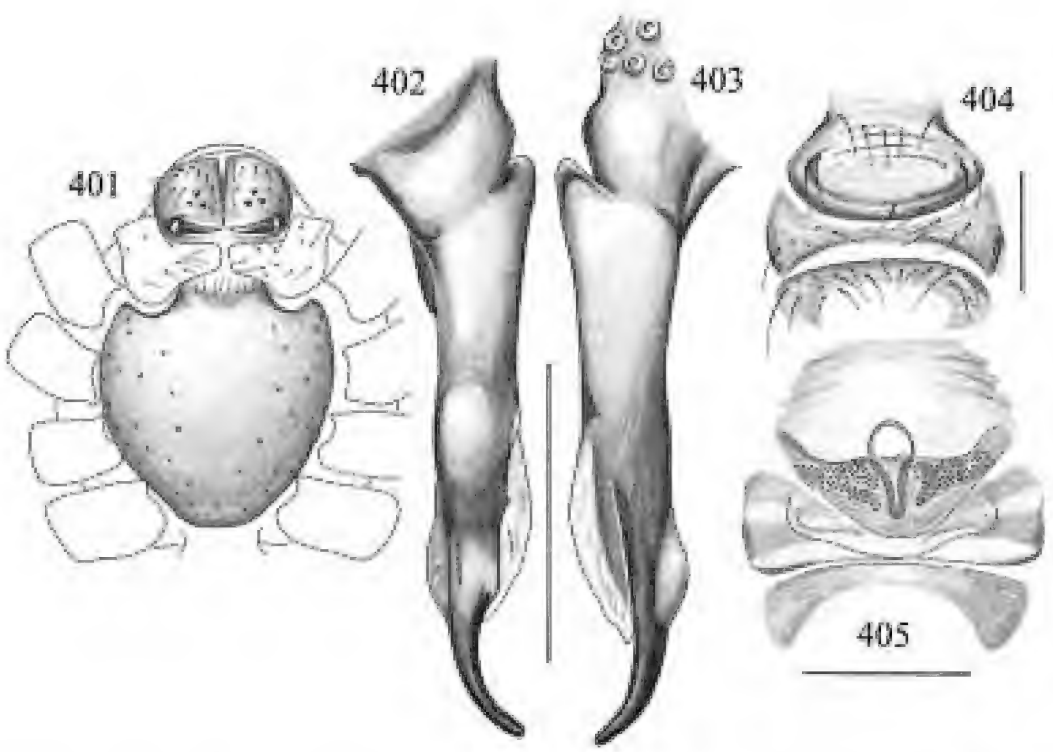
Figs. 395–400. *Aucana platnicki*, n. gen., n. sp., male. **395**. Habitus, lateral view. **396–397**. Prosoma, dorsal and frontal views. **398**. Left palp, prolateral view. **399**. Left palp, retrolateral view. **400**. Chelicerae, frontal view. Scale lines: 0.5 mm (395), 0.2 mm (396–400).

K. Catley, M. Ramirez, R. T. Allen), in AMNH.

ETYMOLOGY: Named for the third collector.

DIAGNOSIS: Distinguished from the closely related *A. platnicki* by the more curved procursus (compare figs. 403, 407), from *A. petorca* by the stronger tip and proximal apophysis of the procursus (compare figs. 407, 411); from other congeners also by the three tiny frontal cones on the male chelicerae (cf. fig. 400).

MALE (holotype): Total length 1.22, carapace width 0.56; leg 1: 4.23 (1.13+0.23 +1.13+1.26+0.48), tibia 2: 0.87, tibia 3:



Figs. 401–405. *Aucana platnicki*, n. gen., n. sp. **401**. Male prosoma, ventral view. **402**. Left procursus, prolateral view. **403**. Left procursus, retrolateral view. **404**. Epigynum, ventral view. **405**. Epigynum, dorsal view. Scale lines: 0.2 mm (404–405), 0.1 mm (402–403).

0.69, tibia 4: 1.02; tibia 1 l/d: 17. Habitus as in *A. platnicki* (cf. fig. 395). Entire prosoma ochre-yellow, only carapace with broad, slightly darker Y mark; no thoracic groove; distance PME-ALE about 40% of PME diameter. Sternum without anterior humps. Chelicerae as in *A. platnicki* (cf. fig. 400). Palps in general as in *A. platnicki*, only procursus more curved (figs. 406–407). Legs monochromous ochre-yellow, no rings visible; legs without spines, without curved and vertical hairs (but many hairs missing); retrolateral trichobothrium of tibia 1 at 51%; tarsus 1 with ~ 7 pseudosegments. Opisthosoma ochre-gray, darker dorsally.

VARIATION: Tibia 1 in 4 males: 1.10–1.13. In two freshly molted paratypes, the opisthosoma has about six pairs of dark spots dorsally; in two paratypes there are faint dark rings on femora (subdistally) and tibiae (proximally and subdistally).

FEMALE: Total length (N = 8) 1.2–1.7 ($\bar{x}$ = 1.5); tibia 1 (N = 7) 0.90–1.00 ($\bar{x}$ = 0.98). In general very similar to male, but rings on legs usually well visible: on femora (subdistally) and tibiae (proximally and subdistally). Epigynum light brown, very simple externally, with median duct(?) usually well visible from outside (fig. 408); internally with transparent median sac (receptacle?) (fig. 409; differences to *A. platnicki* may be mostly due to minimal differences in angle of view).

DISTRIBUTION: Known only from type locality.

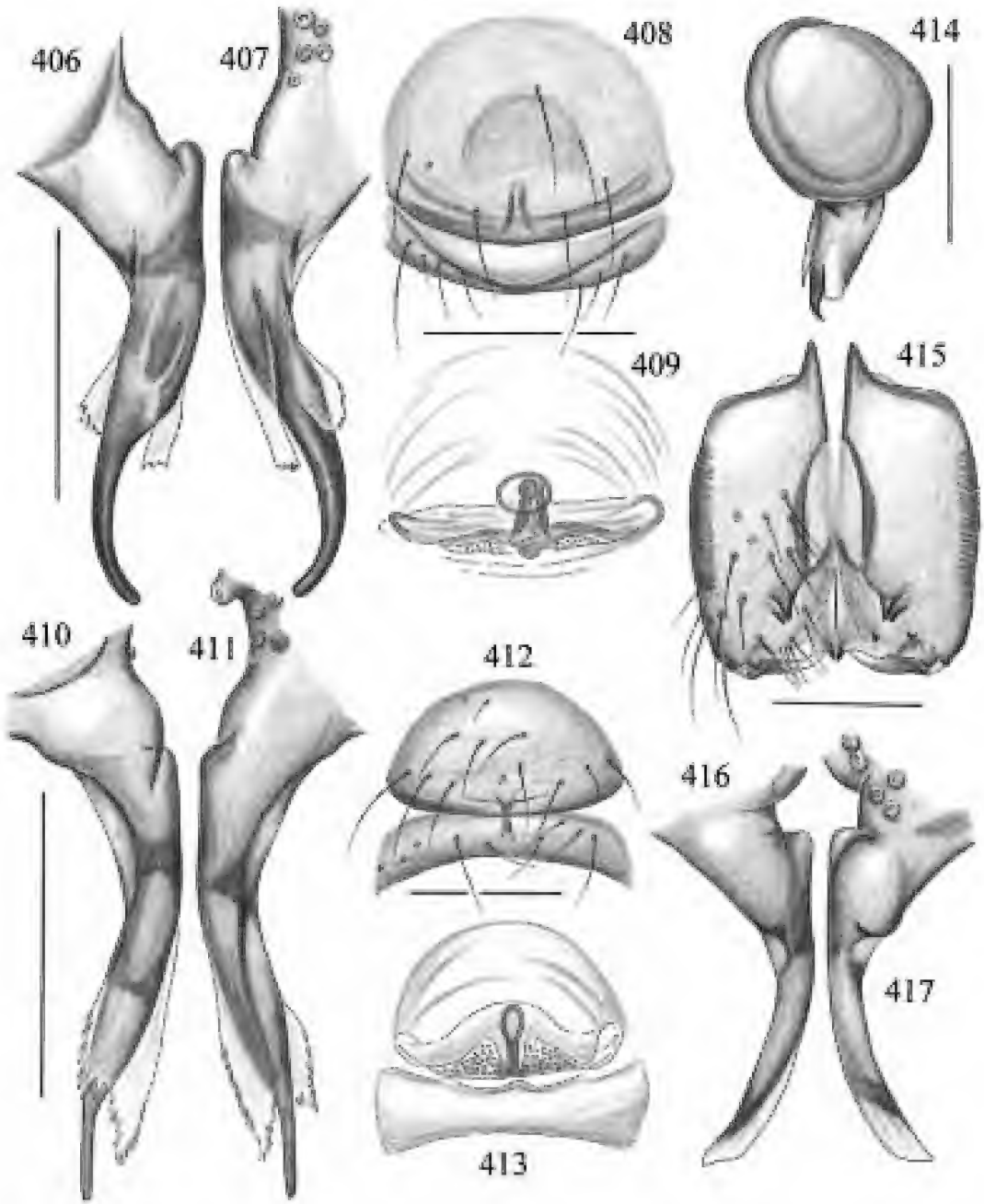
MATERIAL EXAMINED: CHILE: *Coquimbo*: Choapa: Elqui: types above.

Aucana petorca, new species

Figures 410–413

Ninetis sp. 1: Huber, 1998d: 42, fig. 3j.

TYPES: Male holotype, 1♂ 6♀ paratypes from Petorca: Los Molles, Valparaiso, Chile; km 188, Rt. 5 (32°14′S, 71°30′W), 10 m



Figs. 406–417. *Aucana* spp. 406–409. *A. ramirezi*, n. gen., n. sp. **406**. Left procursus, prolateral view. **407**. Left procursus, retrolateral view. **408**. Epigynum, ventral view. **409**. Epigynum, dorsal view. 410–413. *A. petorca*, n. gen., n. sp. **410**. Left procursus, prolateral view. **411**. Left procursus, retrolateral view. **412**. Epigynum, ventral view. **413**. Epigynum, dorsal view. 414–417. *A. paposo*, n. gen., n. sp., male holotype. **414**. Right genital bulb, prolateral view. **415**. Chelicerae, frontal view. **416**. Left procursus, prolateral view. **417**. Left procursus, retrolateral view. Scale lines: 0.2 mm (408–409, 412–413), 0.1 mm (406–407, 410–411, 414–415).

elev., Nov. 13, 1993 (N. I. Platnick, K. Catley, M. Ramirez, R. T. Allen), in AMNH.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from *A. platnicki* and *A. ramirezi* by the straight, thin and weakly pigmented tip of the procursus (figs. 410–411); from other congeners also by the three tiny frontal cones on the male chelicerae (cf. fig. 400).

MALE (holotype): Total length 1.23, carapace width 0.57; leg 1: 4.07 (1.13+0.19 +1.11+1.16+0.48), tibia 2: 0.84, tibia 3: 0.68, tibia 4: 1.03; tibia 1 l/d: 17. Habitus as in *A. platnicki* (cf. fig. 395); distance PME-ALE about 40% of PME diameter. Entire prosoma and legs ochre-yellow; legs without rings; chelicerae and palps in general as in *A. platnicki*, only procursus significantly different, with weak proximal apophysis and straight, thin and weakly pigmented tip (figs. 410–411); legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 56%; tarsus 1 with ~ 7–8 pseudosegments. Opisthosoma monochromous ochre-gray.

VARIATION: Tibia 1 in 8 males (type locality): 1.10–1.23 ($\bar{x}$ = 1.17). Some males have some faint darker spots dorsally on the opisthosoma.

FEMALE (type locality): Tibia 1 (N = 15) 0.97–1.16 ($\bar{x}$ = 1.08). In general very similar to male. Epigynum ochre-yellow to light brown, as in fig. 412; dorsal view as in fig. 413.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: CHILE: *Valparaiso*: Petorca: Los Molles: types above; same locality (N. I. Platnick, K. Catley, M. Ramirez, R. T. Allen, R. Calderón), Nov. 9–13, 1993, and Jan. 27, 1994 (several vials), 8♂ 14♀ 15 juveniles in AMNH.

Aucana paposo, new species

Figures 414–417

TYPE: Male holotype from 6 km E Paposo, Antofagasta, Chile; 480 m elev., Oct. 12, 1992 (N. I. Platnick, K. Catley, P. Goloboff), in AMNH.

ETYMOLOGY: Named for the town close to the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from *A. platnicki*, *ramirezi*, and *petorca* by the simple, ribbon-shaped procursus (figs. 416–417), the single, distinctive apophysis of the bulb (fig. 414), and the relatively larger proximal pair of apophyses on the male chelicerae (fig. 415).

MALE (holotype): Total length ~ 1.05 (prosoma damaged), carapace width ~ 0.48; all legs missing. Habitus as in *A. platnicki* (cf. fig. 395). Entire prosoma light brown, opisthosoma greenish-gray with darker spots dorsally; procursus, bulb and chelicerae as in figs. 414–417.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: CHILE: *Antofagasta*: 6 km E Paposo: type above.

Aucana kaala, new species

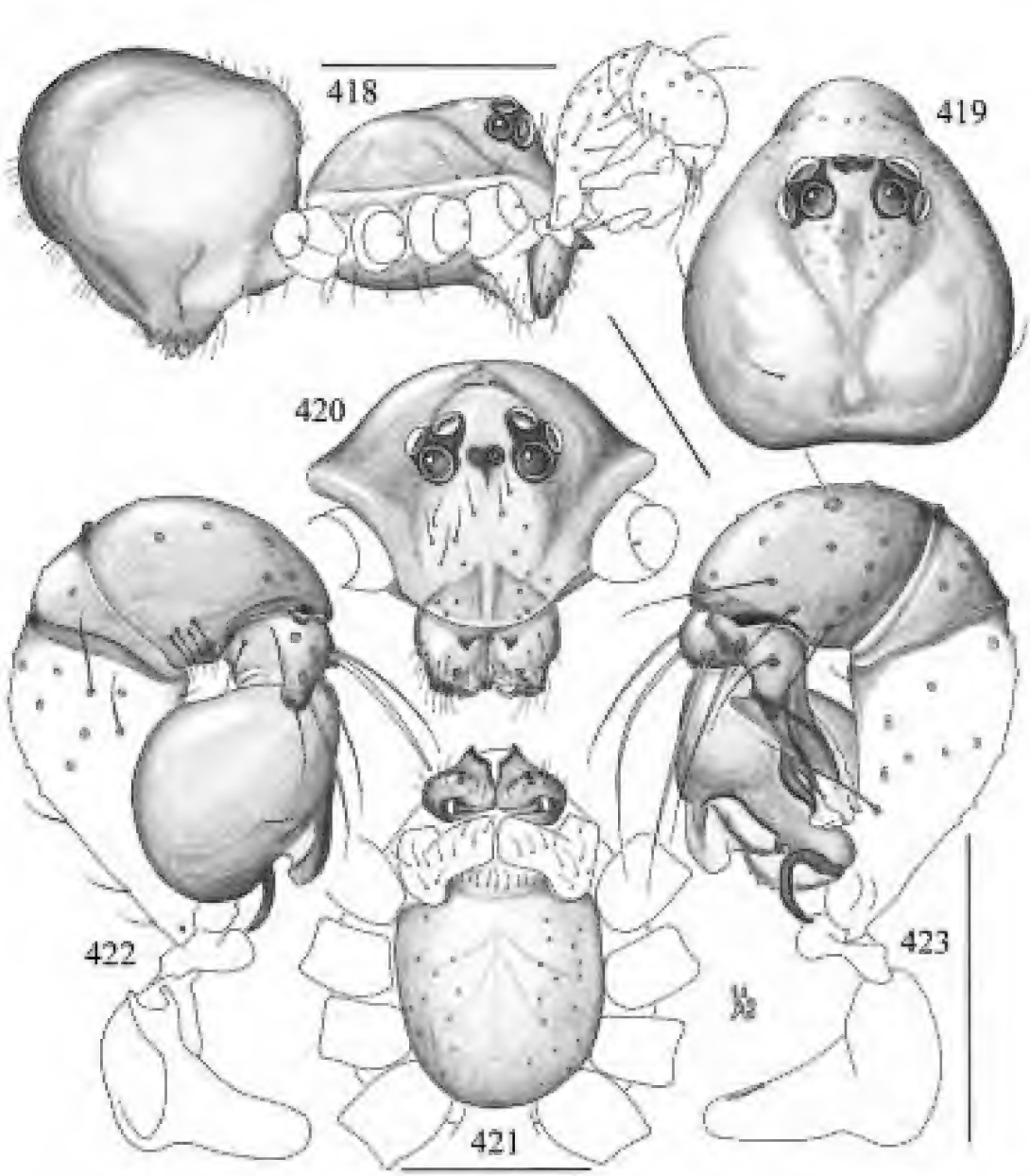
Figures 87, 156, 418–428

TYPES: Male holotype, 7♂ 10♀ paratypes, and 8 juveniles from Piton de Pandop, near Mt. Kaala (20°35′S, 164°21′E), Prov. Nord, New Caledonia; 380 m elev., dry forest, Feb. 14, 1993 (N. I. Platnick, R. J. Raven, M. S. Harvey), in AMNH.

ETYMOLOGY: Named for Mt. Kaala near the type locality. The specific name is a noun in apposition.

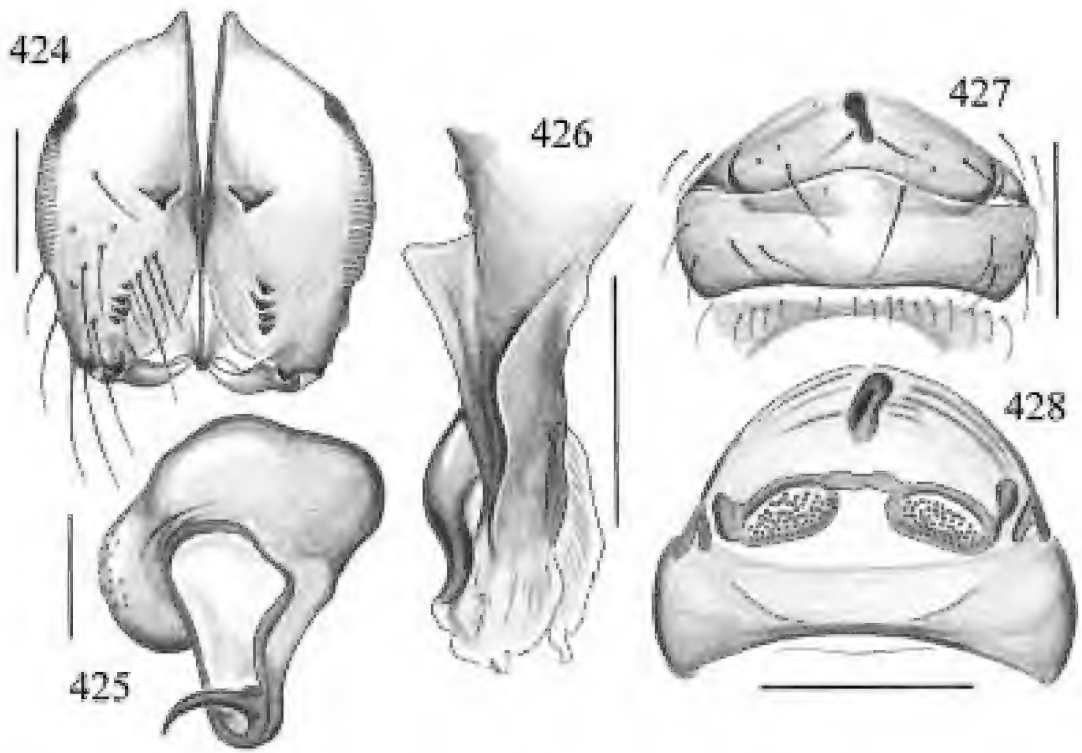
DIAGNOSIS: Distinguished from the Chilean species above by the large distal apophysis on the bulb (figs. 423, 425), the shape of the more complex procursus (fig. 426), and the larger proximal pair of apophyses on the male chelicerae in addition to the tiny, cone-shaped apophyses distally (fig. 424). The AMNH and QMB have at least three further, closely related species from New Caledonia, which show minimal differences in the shape of procursus and epigynum, and in the armature of the male chelicerae.

MALE (holotype): Total length 1.06, carapace width 0.51; leg 1: 3.23 (0.86+0.20 +0.88+0.88+0.41), tibia 2: 0.69, tibia 3: 0.49, tibia 4: 0.88; tibia 1 l/d: 15. Habitus as in fig. 418. Entire prosoma ochre-yellow; carapace without thoracic groove (fig. 420), distance PME-ALE about 30% of PME di-



Figs. 418–423. *Aucana kaala*, n. gen., n. sp., male. **418**. Habitus, lateral view. **419–421**. Prosoma, dorsal, frontal, and ventral views. **422**. Left palp, prolateral view. **423**. Left palp, retrolateral view. Scale lines: 0.5 mm (418), 0.3 mm (419–423).

ameter. Sternum without frontal humps (fig. 421); chelicerae with several small cone-shaped apophyses in row on each side, and larger pair more proximally (fig. 424). Palps as in figs. 422–423, coxa without retrolateral apophysis, femur distally very wide, procursus with dorsal apophysis proximally and complex membranous tip (fig. 426); tarsal organ exposed (fig. 87); bulb with large curved apophysis projecting from sclerotized arch surrounding whitish area (fig. 425), and smaller apophysis just aside larger one (fig. 423). Legs monochromous ochre-yellow; without spines, without curved and vertical



Figs. 424–428. *Aucana kaala*, n. gen., n. sp. **424**. Male chelicerae, frontal view. **425**. Left genital bulb, ~distal view. **426**. Left procursus, retrolateral view. **427**. Epigynum, ventral view. **428**. Epigynum, dorsal view. Scale lines: 0.2 mm (427–428), 0.1 mm (424–426).

hairs; retrolateral trichobothrium of tibia 1 at 56%; tarsus 1 with ~ 5 pseudosegments. Opisthosoma ochre-gray, with faint darker spots dorsally; gonopore without epiandrous spigots; ALS with several piriform gland spigots (fig. 156).

FEMALE (type locality): Total length (N = 9) 0.98–1.45 ($\bar{x}$ = 1.20), tibia 1 (N = 13) 0.80–0.98 ($\bar{x}$ = 0.85). In general very similar to male. Epigynum consisting of simple flat frontal plate and very large posterior plate (fig. 427); internally with pair of oval pore plates and dark structure of unknown significance frontally that is always asymmetrically positioned (fig. 428).

VARIATION: Tibia 1 in eight males from type locality: 0.84–0.94 ($\bar{x}$ = 0.91); tibia 1 in two males from Col d'Amieu: 1.02, 1.04; the single male from Grottes d'Adio has identical palps and chelicerae, but is different in some somatic characters, and therefore assigned tentatively to the species: the legs are much longer (tibia 1: 1.67), while the carapace is only slightly broader (0.64), the ocular area is slightly flatter, the AME are reduced to pigment specks. All these are typical morphological changes accompanying transition into a cave habitat (cf. *Aymaria* species on Galápagos), and there may well be reproductive isolation.

DISTRIBUTION: Known only from Prov. Nord, New Caledonia.

MATERIAL EXAMINED: NEW CALEDONIA: *Prov. Nord:* Piton de Pandop: types above; same data, 1♂ 1♀ in AMNH; same locality, same collectors, Feb. 18, 1993, 1♂ 3♀ 10 juveniles in AMNH; 2 km W Col d'Amieu, Forestry Station, 430 m elev., "Berlese, litter," May 26, 1987 (N. I. Platnick & R. Raven), 9♂ 5♀ (2 vials) in AMNH; Col d'Amieu, 440 m elev., May 26, 1987 (R. Raven), 4♂ 5♀ 3 juveniles in QMB; Col d'Amieu, E slope past forest station, litter, Nov. 6, 1988 (R. Raven), 3♂ 9♀ 3 juveniles in QMB; Col d'Amieu, 400 m elev., rain forest, N of La Foa, "forest litter,

Berlese," July 31–Aug. 7, 1978 (S. & J. Peck), 1♂ in AMNH; Mandjélia, rain forest litter, 700 m elev., May 12, 1984 (G. Monteith & D. Cook), 1♂ 3♀ (2 vials) in QMB; "Presqu'île Montagnés," 30 m elev., (166°07′E, 22°02′S), "forêt sèche/calcaire, berlese," Nov. 9, 1998 (A. & S. Tillier, J. Chazeau), 1♂ 1♀ in MNHN. Tentatively assigned: Grottes d'Adio (21°15′S, 165°15′E), Feb. 21, 1993 (N. I. Platnick, R. J. Raven, M. S. Harvey), 1♂ 1 juvenile in AMNH.

PHOLCOPHORA BANKS, 1896

Pholcophora Banks, 1896: 57 (type species by monotypy *P. americana* Banks, 1896; examined). – Gertsch, 1971: 76; 1977: 112; 1982: 96–97. – Gertsch and Peck, 1992: 1190.

DIAGNOSIS: Small to medium-sized (total length ~ 1.3–3 mm), short-legged pholcids, with eight eyes and globular opisthosoma; distinguished from similar short-legged genera as follows: from *Tolteca* by the long apophyses proximally on the male chelicerae, and by the presence of stridulatory files on the male chelicerae; from *Papiamenta* by the much longer procursus and the simple bulb, and by the presence of humps frontally on the male sternum.

DESCRIPTION: Total length ~ 1.3–3 mm. Carapace ochre to light brown, with shallow but distinct thoracic groove (fig. 431), ocular area only slightly elevated, with eight eyes, AME only slightly smaller than others; distance PME-ALE relatively small (~ 30% of PME diameter). Male clypeus unmodified. Male chelicerae with pair of long frontal apophyses, with stridulatory ridges laterally. Male sternum with conspicuous humps frontally. Male palpal coxa without retrolateral apophysis, femur enlarged distally, with simple retrolateral apophysis proximally, tibia globular, procursus very simple, ribbon-shaped; bulb with simple embolar division; tarsal organ capsulate (examined: *P. americana*). Legs relatively short (leg 1 about 3 × body length; tibia 1 l/d: 12–14), leg formula 4123, leg 4 only slightly longer than leg 1; legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 very distal (at ~ 60%); tarsus with only ~ 5–8 pseudosegments. Opisthosoma globular, with darker spots dorsally. Male gonopore with four epiandrous spigots (examined: *P. americana*: fig. 129). ALS with several piriform gland spigots (examined: *P. americana*: fig. 155), other spinnerets typical for family.

Sexual dimorphism slight; epigynum extremely simple externally; I could not find pore plates.

MONOPHYLY: The three core-species (*P. americana*, *mexcala*, *texana*) share the ribbon-shaped procursus, the long frontal apophyses on the male chelicerae, and the humps on the male sternum. However, none of these characters is unique to *Pholcophora* (see Generic Relationships below). Nevertheless, the general similarity suggests that the species are at least very closely related.

GENERIC RELATIONSHIPS: The genus may be close to several other genera of short-legged pholcids with globular opisthosoma, especially with *Tolteca*, which has a very similar procursus (but very different chelicerae!), and with *Papiamenta*, which has similar chelicerae (but very different bulbs!).

MISPLACED SPECIES: Of the 14 extant species previously assigned to *Pholcophora*, all but three are here either transferred to other genera, or are considered incertae sedis: *P. baerti* and *bella* are transferred to *Galapa*, *P. diluta* and *baja* to *Chisosa*, *P. hesperia* and *jalisco* to *Tolteca*, *P. levii* to *Papiamenta*, *P. munda* to *Guaranita*; three species cannot be placed: *P. juruensis* from Alto-Juruá, Brazil (see appendix 3), *P. bahama* from Bahama Islands (only female known) and *P. maria* from Yucatán, Mexico (only female known). The latter two are redescribed at the end of the descriptions section. I cannot comment on the three fossil species found in Dominican amber (Wunderlich, 1988).

NATURAL HISTORY: It seems that nothing has been published about the natural history of *P. americana*, probably the most common and widely distributed indigenous US pholcid. Gertsch (1982), who collected a lot himself, briefly characterized the genera *Pholcophora* and *Anopsicus* as living "reclusive lives under ground objects, in leaf and plant detritus, and in soil openings and caves," and mentioned that they "spin web tangles in dark spaces and remain there in close contact with such webs as permanent residents, often in informal colonies."

DISTRIBUTION/COMPOSITION: Three extant

species from southwestern Canada, western USA, and Mexico; plus three fossil species from Hispaniola (Wunderlich, 1988; I have not seen these and cannot comment on their congenerity); plus three species incertae sedis.

Pholcophora americana Banks, 1896

Figures 129, 155, 429–440

Pholcophora americana Banks, 1896: 57–58. – Gertsch, 1935: 11, 13, figs. 19–21. – Chamberlin and Ivie, 1935: fig. 44. – Gertsch, 1982: 97, 99, figs. 1–4, 7–9.

Pholcophora obscura Chamberlin and Ivie, 1935: 12, fig. 45. First synonymized by Gertsch, 1982.

TYPES: *P. americana*: two male and two female syntypes from Ft. Collins, Colorado, USA; no date (N. Banks), in MCZ (examined). *P. obscura*: female holotype from Aspen Valley, Yosemite Park, California, USA; Aug. 11, 1931 (W. Ivie) (not examined; this type should be at the AMNH but I was not able to find it).

DIAGNOSIS: Close relative of *P. mexcala* and *texana*; easily distinguished from both by the shape of the male cheliceral apophyses (compare figs. 435, 442, 444); also by the shape of the procursus (compare figs. 437, 441, 445); from *P. texana* also by the lack of modified hairs on the male palpal femur.

MALE (Hat Creek, California; for general description see Gertsch, 1982): Total length 2.2, carapace width 0.93; leg 1: 6.0 (1.6+0.4+1.6+1.8+0.6), tibia 2: 1.4, tibia 3: 1.2, tibia 4: 1.7; tibia 1 l/d: 14. Habitus and prosoma shape as in figs. 429–431. Distance PME-ALE about 30% of PME diameter. Chelicerae with stridulatory files laterally (fig. 435; stridulatory pick is a modified hair proximally on palpal femur). Procursus simple rod, distally with semitransparent projection (fig. 437). Tarsal organ capsulate. Sternum frontally with pair of humps (figs. 431, 436), as already noted in original description (Banks, 1896). Legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 57%; tarsus 1 with ~ 5–8 pseudosegments. Gonopore with two pairs of epiandrous spigots (fig. 129). ALS with several piriform gland spigots (fig. 155).

VARIATION: Tibia 1 in 11 males (Hat Creek, California): 1.55–1.74 ($\bar{x}$ = 1.64).

FEMALE (Hat Creek, California): Total length (N = 12) 2.1–2.6; tibia 1 (N = 13) 1.23–1.68 ($\bar{x}$ = 1.47). Epigynum as in figs. 438–439; internally as in fig. 440; I could not see pore plates.

DISTRIBUTION: Widely distributed in the western U.S., throughout the Rocky Mountains; also known from one locality in southwestern Canada. So far not reported from Mexico.

MATERIAL EXAMINED: USA: Numerous specimens from the following states: *Washington*, *Idaho*, *Montana*, *Oregon*, *Wyoming*, *California*, *Nevada*, *Utah*, *Arizona*, *Colorado*, *New Mexico*, all in AMNH. CANADA: *British Colombia* (117°40′W, 49°05′N), Sept. 8, 1963 (J. & W. Ivie), 1♂ (AMNH).

Pholcophora mexcala Gertsch, 1982

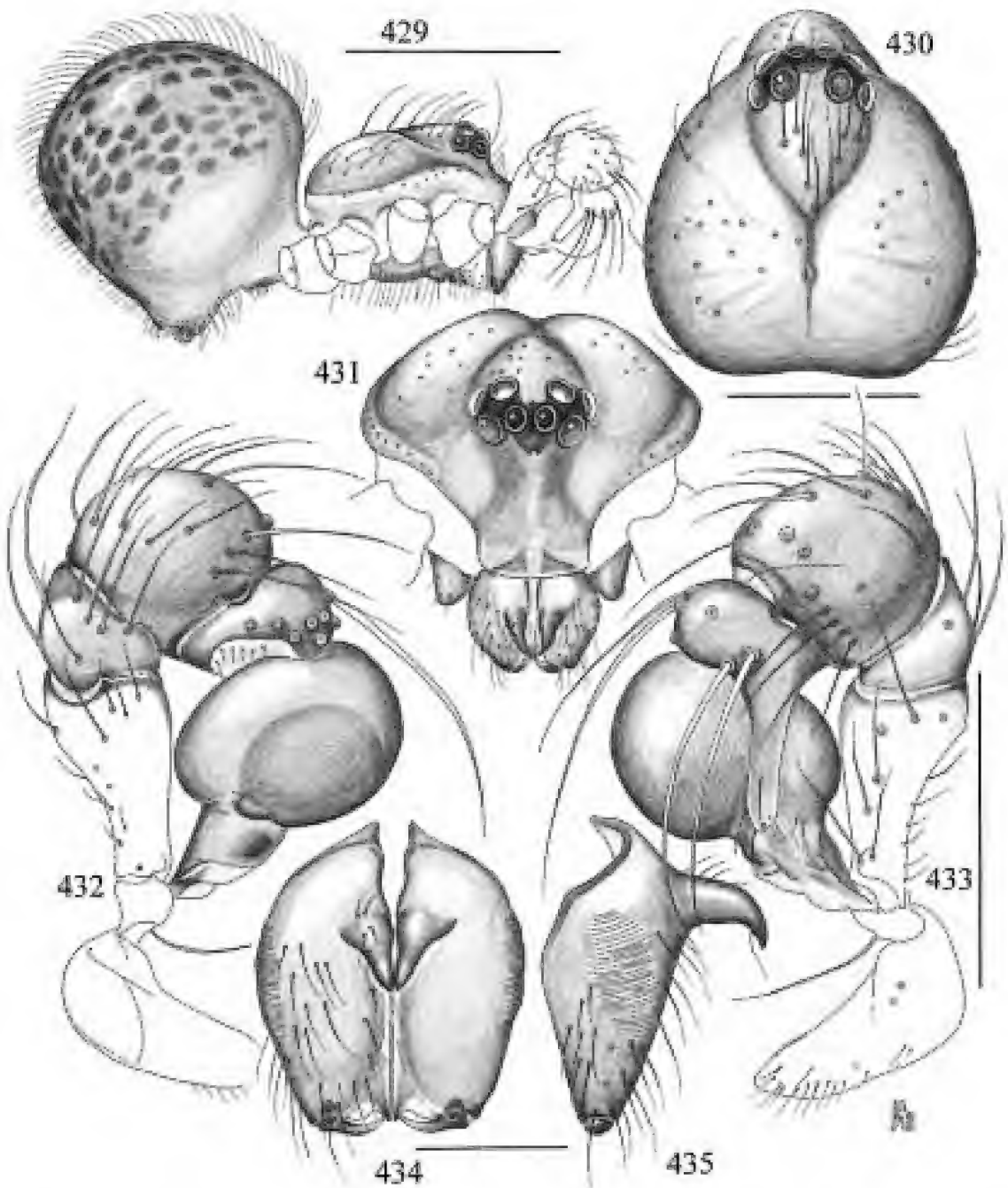
Figures 441–442

Pholcophora mexcala Gertsch, 1982: 99, figs. 5–6, 10–11.

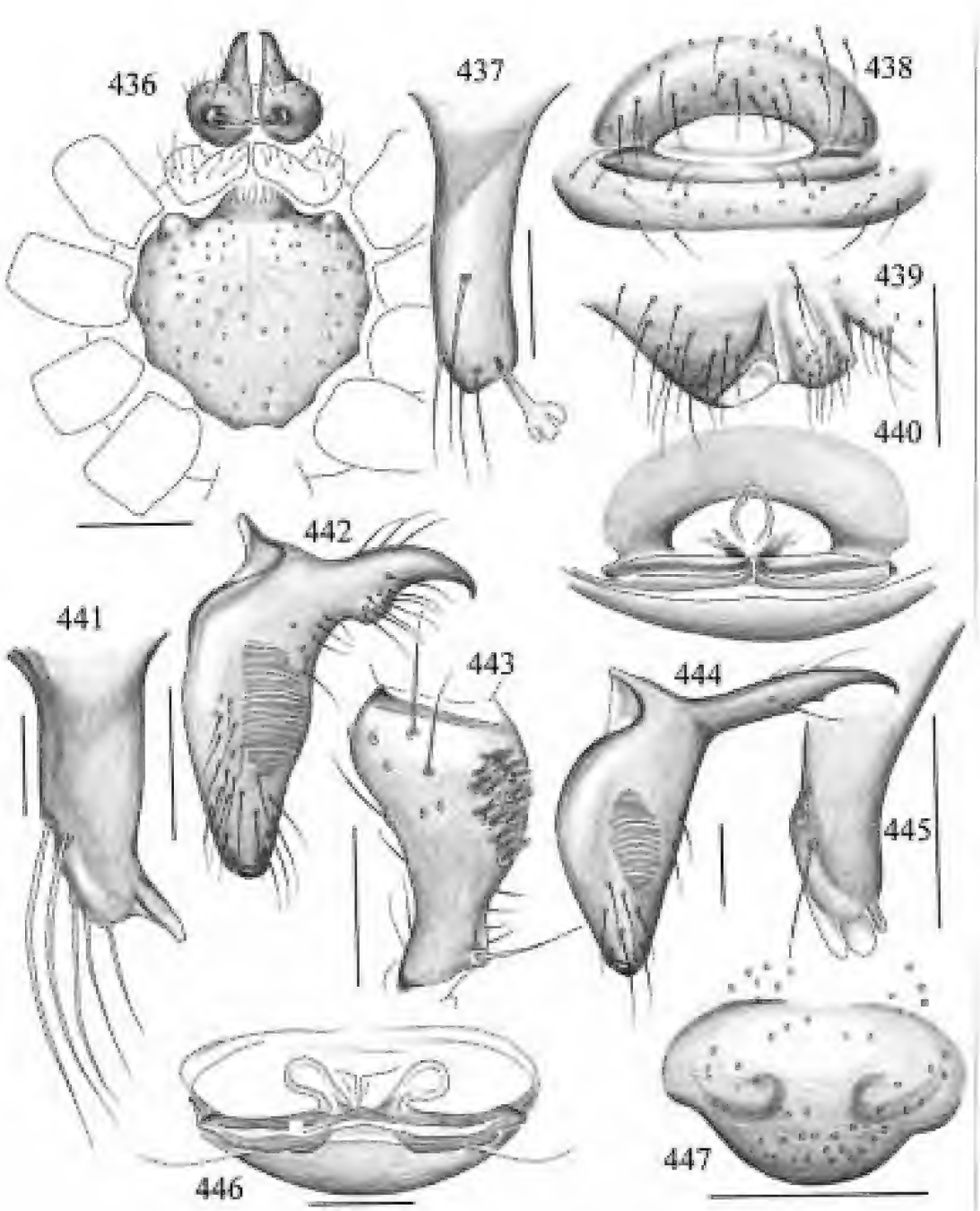
TYPE: Male holotype from Mexcala, Guerrero, Mexico; July 2, 1941 (L. I. Davis), in AMNH (examined).

DIAGNOSIS: Closely related to *P. americana* and *texana*; distinguished from both by the shape of the cheliceral apophyses (compare figs. 435, 442, 444), the shape of the procursus (compare figs. 437, 441, 445), and the significantly larger size; from *P. texana* also by the absence of modified hairs on the palpal femur (cf. fig. 443).

MALE (holotype; see Gertsch, 1982 for general description): Total length 3.1, carapace width 1.4; femur 1: 3.3 (other segments missing), tibia 2: 3.0, tibia 3: 2.2, tibia 4 missing. Habitus and prosoma shape as in *P. americana* (cf. figs. 429–431). Carapace with shallow but distinct thoracic groove, sternum with distinct anterior humps. Chelicerae with stridulatory files laterally (fig. 442; stridulatory pick is a modified hair proximally on femur), and characteristic apophyses frontally (fig. 442; see also fig. 5 in Gertsch, 1982). Palps in general identical to those of *P. americana* (cf. figs. 432–433); procursus simple rod, distally with semitransparent projection (fig. 441). Legs without spines, without curved and vertical hairs.



Figs. 429–435. *Pholcophora americana* Banks, male. **429**. Habitus, lateral view. **430–431**. Prosoma, dorsal and frontal views. **432**. Left palp, prolateral view. **433**. Left palp, retrolateral view. **434–435**. Chelicerae, frontal and lateral views. Scale lines: 1.0 mm (429), 0.5 mm (430–433), 0.2 mm (434–435).



Figs. 436–447. *Pholcophora* spp. 436–440. *P. americana* Banks. **436**. Male prosoma, ventral view. **437**. Left procursus, retrolateral view. **438–439**. Epigynum, ventral and lateral views. **440**. Epigynum, dorsal view. 441–442. *P. mexcala* Gertsch, male holotype. **441**. Left procursus, retrolateral view. **442**. Chelicerae, lateral view. 443–447. *P. texana* Gertsch. **443**. Male right palpal femur, retrolateral view. **444**. Male chelicerae, lateral view. **445**. Left procursus, retrolateral view. **446**. Epigynum, dorsal view. **447**. Epigynum, ventral view. Scale lines: 0.3 mm (436, 438–440, 442, 447), 0.1 mm (437, 441, 443–446).

FEMALE: Unknown.

DISTRIBUTION: Only known from type locality.

MATERIAL EXAMINED: MEXICO: *Guerrero*: Mexcala: type above.

Pholcophora texana Gertsch, 1935

Figures 443–447

Pholcophora texana Gertsch, 1935: 11, figs. 22–24. – Gertsch and Mulaik, 1941: 319. – Gertsch and Davis, 1942: 8. – Gertsch, 1971: 76–77; 1982: 100, figs. 16–18, 25–27.

TYPES: Male holotype, with 1♀ and one juvenile from 0.5 mi E Rio Grande City, "Brick Yard," Texas, USA; Nov. 11, 1934 (S. Mulaik), in AMNH (examined).

DIAGNOSIS: Closely related to *P. americana* and *texana*; distinguished from both by the long straight cheliceral apophyses (fig. 444), the shape of the procursus (compare figs. 437, 441, 445), and the modified hairs on the male palpal femur (fig. 443).

MALE (holotype; see Gertsch, 1982 for general description): Total length 1.25, carapace width 0.6; leg 1: 3.8 (1.0+0.3 +0.96+1.1+0.4), tibia 2 missing, tibia 3: 0.7, tibia 4: 1.0; tibia 1 l/d: 12. Habitus and prosoma shape as in *P. americana* (cf. figs. 429–431); distance PME-ALE about 30% of PME diameter. Carapace with shallow thoracic groove, sternum with distinct anterior humps. Chelicerae with stridulatory files laterally and characteristic apophyses frontally (fig. 444). Palps in general identical to those of *P. americana* (cf. figs. 432–433), but femur with modified hairs ventrally (fig. 443), and procursus different (fig. 445). Legs without rings; without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 61%; tarsus 1 with ~ 5 pseudosegments.

VARIATION: Tibia 1 in other males: 0.97 (San Fernando, Tamaulipas), 1.39 (Santo Domingo, San Luis Potosí) (see Remarks below).

FEMALE: In general very similar to male; tibia 1 of female accompanying holotype: 0.97. Epigynum very simple (fig. 447), apparently with pair of receptacles (fig. 446).

DISTRIBUTION: Known from Texas (USA) and several localities in north-eastern Mexico (see Remarks below).

MATERIAL EXAMINED (all in AMNH): USA: *Texas*: Starr County: 0.5 mi E Rio Grande City: type above; same data, 1♀; 5 mi E Rio Grande City, Jan. 21, 1939 (S. Mulaik), 1♀ 1 juvenile. MEXICO: *San Luis Potosí*: 2 mi E Santo Domingo, June 6, 1941 (A. M. & L. I. Davis), 1♂ 1♀; *Tamaulipas*: San Fernando, Mar. 28, 1937 (L. I. Davis), 1♂ 1♀; El Tinieblo, Feb. 23, 1973 (W. Graham), 2♀ 2 juveniles; Rio Gualolejo(?), near Forlon, Apr. 16, 1938 (L. I. Davis & B. Brown), 1♀; *Nuevo León*: Montemorelos, May 23, 1952 (M. Cazier, W. J. Gertsch, R. Schrammel), 1♀ 1 juvenile; Grutas de San Bartolo, 10 mi S Santa Catarina, Feb. 1966 (B. Russell, D. McKenzie), 1♀ 1 juvenile; *Hidalgo*: 2 mi SW Jacala, (99°13′W, 20°59′N), Aug. 18, 1964 (J. & W. Ivie), 1♀.

REMARKS: Several of the vials contain only females. Considering the simplicity of the epigynum, these specimens are here assigned tentatively to the species. The two males from Mexico have considerably longer legs than the type (see above), but I could find no differences in the palp and chelicerae.

TOLTECA, NEW GENUS

TYPE SPECIES: *Pholcophora hesperia* Gertsch, 1982.

ETYMOLOGY: The generic name honors the Toltecs, a preconquest Mexican people, who were marvelous artisans and architects. The Aztec emperor Motecuhzoma Xocoyotzin, himself claimed descent from Toltec ancestors. Gender feminine.

DIAGNOSIS: Tiny pholcids (total length 1.1–1.4 mm), with very short legs, globular opisthosoma, eight eyes; distinguished from other North American short-legged genera (*Pholcophora*, *Chisosa*) by the hook-shaped apophyses distally on the male chelicerae, and the absence of stridulatory ridges on the chelicerae.

DESCRIPTION: Total length ~ 1.1–1.4 mm. Carapace ochre to light brown, with shallow, indistinct thoracic groove (fig. 449), ocular area hardly elevated, with eight eyes, AME only slightly smaller than others; distance PME-ALE small (~ 30% of PME diameter). Male clypeus unmodified. Male chelicerae with pair of hooked apophyses distally, without stridulatory ridges laterally (fig. 453).

Male sternum with conspicuous humps frontally (figs. 449–450). Male palpal coxa without retrolateral apophysis, femur almost cylindrical, tibia very short, almost globular (figs. 451–452), procursus very simple, ribbon-shaped (figs. 454–455, 459); bulb large, embolar division gradually tapering; tarsal organ capsulate with small opening (examined: *T. hesperia*: fig. 75). Legs extremely short (leg 1 about 2 × body length; tibia 1 l/d: 7–8), leg formula 4123; legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 very distal (at ~ 65%); tarsus with only ~ 5–6 pseudosegments. Opisthosoma globular, with darker spots dorsally. Male gonopore with four epiandrous spigots in two pairs (examined: *T. hesperia*: fig. 126). ALS with several piriform gland spigots (examined: *T. hesperia*: fig. 153), other spinnerets typical for family.

Sexual dimorphism slight; epigynum extremely simple externally; I could not find pore plates.

MONOPHYLY: The two species included (which are possibly synonyms; see Diagnosis of *T. jalisco*) have identical male chelicerae and almost identical male palps.

GENERIC RELATIONSHIPS: The genus may be close to several other genera of short-legged pholcids with globular opisthosoma and ninetine tarsal organ (cf. figs. 73–78), especially with *Pholcophora* (with which it shares the frontal humps on the male sternum and the simple, ribbon-shaped procursus). The close relationship of *Tolteca* with *Ninetis* suggested in the cladogram in appendix 2, is probably an artifact due to the poor resolution within ninetines as a result of insufficient data.

DISTRIBUTION/COMPOSITION: Only two described species, widely distributed in Mexico.

Tolteca hesperia (Gertsch, 1982), new combination

Figures 75, 126, 153, 448–457

Pholcophora hesperia Gertsch, 1982: 102, figs. 34–36, 45–47.

TYPE: Male holotype from 5 mi S Mazatlán, Sinaloa, Mexico; July 23, 1954 (W. J. Gertsch), in AMNH (examined).

DIAGNOSIS: Close relative (possibly a synonym) of *T. jalisco* (see Diagnosis there). Distinguished by the short sclerotized rim dorsally on the bulb of *T. jalisco* (arrow in fig. 458).

MALE (holotype; see Gertsch, 1982, for measurements and general description): Chelicerae with pair of distal apophyses (fig. 453), without stridulatory files. Procursus with subdistal bulge dorsally (fig. 454). Sternum frontally with pair of humps (figs. 449–450). Legs without spines, without curved and vertical hairs.

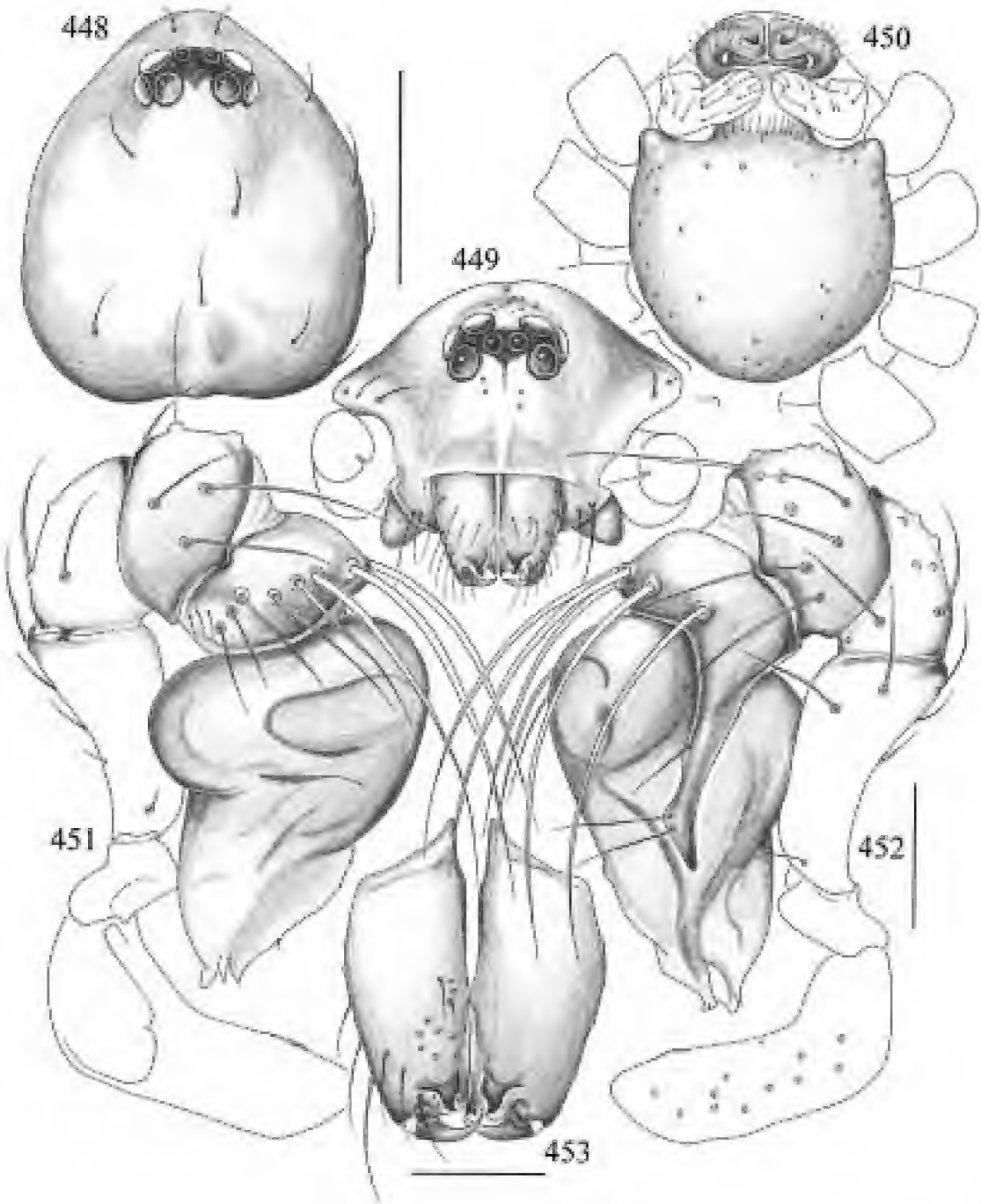
Measurements of a male from Oaxaca: Total length: 1.2, carapace width: 0.48; distance PME-ALE about 30% of PME diameter. Leg 1: 1.99 (0.55+0.16+0.50+0.49+0.29), tibia 2: 0.42, tibia 3: 0.39, tibia 4: 0.65; tibia 1 l/d: 7; retrolateral trichobothrium of tibia 1 at 65%; tarsus 1 with ~ 5 pseudosegments.

VARIATION: Tibia 1 in 3 males (Oaxaca): 0.50–0.57. In the males from Oaxaca, the procursus differs slightly in shape from that in other material (including the type; figs. 454–455). Otherwise there seem to be no differences, so they are here considered conspecific.

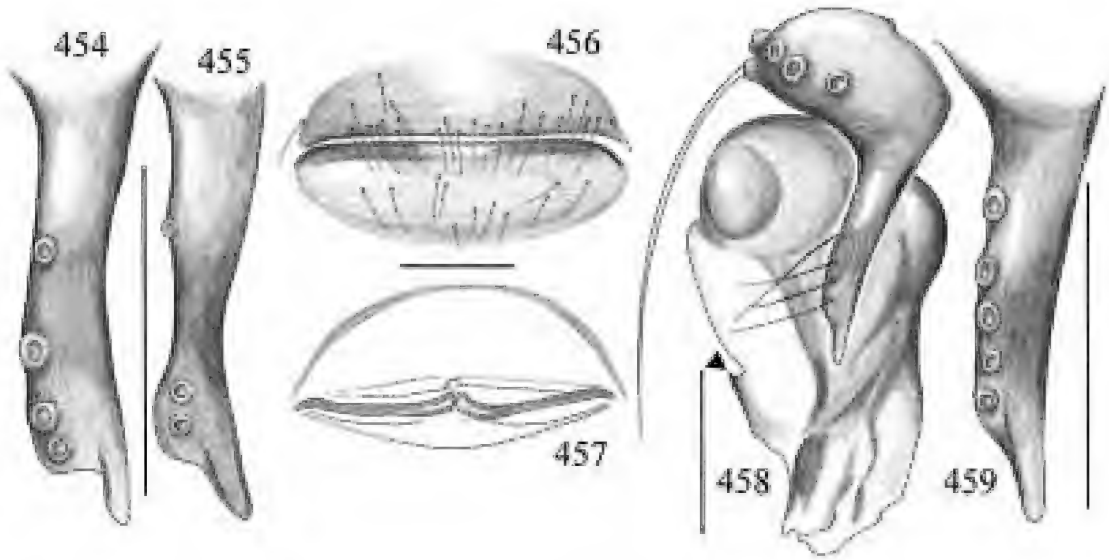
FEMALE (Oaxaca): Total length (N = 10) 1.1–1.4; tibia 1 (N = 12) 0.49–0.57 ($\bar{x}$ = 0.54). Epigynum extremely simple, as in fig. 456, internally as in fig. 457; I could not find pore plates.

DISTRIBUTION: Known from various localities in Mexico, ranging from Sonora to Oaxaca.

MATERIAL EXAMINED (only material including males is listed here; see Remark below): MEXICO: *Sinaloa*: type above; 6 mi E Villa Union, July 23, 1954 (W. J. Gertsch), 1♂ 4♀ 2 juveniles in AMNH; El Esquinal, 62 mi S Culiacan, Aug. 24, 1965 (W. J. Gertsch & R. Hastings), 1♂ 5♀ in AMNH; 3 mi E Esquinapa, Aug. 1, 1964 (W. J. Gertsch & J. Woods), 1♂ 3♀ in MCZ; *Colima*: 10 mi S Colima, Aug. 1, 1954 (W. J. Gertsch), 1♂ 2♀ in AMNH; *Sonora*: 40 mi S Culiacan, Aug. 6, 1956 (V. Roth & W. J. Gertsch), 2♂ 1♀ in AMNH; *Oaxaca*: 2 mi SE Niltepec (94°33′W, 16°32′N), Aug. 16, 1966 (J. & W. Ivie), 2♂ 2♀ 2 juveniles in AMNH; 5 mi W Tequisistlan (95°40′W, 16°25′N), Sept. 1, 1964 (J. & W. Ivie), 1♂ 8♀ 1 juvenile in AMNH; 8 mi W Tehuan-



Figs. 448–453. *Tolteca hesperia* (Gertsch), male from Oaxaca. **448–450**. Prosoma, dorsal, frontal, and ventral views. **451**. Left palp, prolateral view. **452**. Left palp, retrolateral view. **453**. Chelicerae, frontal view. Scale lines: 0.3 mm (448–450), 0.1 mm (451–453).



Figs. 454–459. *Tolteca* spp. 454–457. *T. hesperia* (Gertsch). **454**. Left procursus of holotype, retrolateral view. **455**. Left procursus of male from Oaxaca. **456**. Epigynum, ventral view. **457**. Epigynum, dorsal view. 458–459. *T. jalisco* (Gertsch), male holotype. **458**. Left palpal cymbium with procursus and bulb, retrolateral view (arrow points to sclerotized ridge). **459**. Left procursus, retrolateral view. Scale lines: 0.1 mm.

tepec (95°22′W, 16°22′N), Aug. 29, 1966 (J. & W. Ivie), 1♂ 2♀ 1 juvenile in AMNH; Baja California Sur: nr. La Paz, July 1990 (T. Jackson), 3♂ in AMNH.

REMARK: The AMNH has several more vials, containing only females. Since the epigynum is so extremely simple and the female of the closely related *T. jalisco* is unknown, they are here not assigned to any of the two species. This includes material from the following Mexican States: Sinaloa, San Luis Potosí, Colima, Baja California Sur, Sonora, Oaxaca, Puebla.

Tolteca jalisco (Gertsch, 1982), new combination

Figures 458–459

Pholcophora jalisco Gertsch, 1982: 102–104, figs. 40–41.

TYPE: Male holotype from 20 mi N La Quemada, Jalisco, Mexico; July 28, 1954 (W. J. Gertsch), in AMNH (examined).

DIAGNOSIS: This species is extremely close to, or a synonym of *T. hesperia*. Gertsch (1982) mentions four characters in his diagnosis, all of which seem inadequate: total size (1.1 versus 1.17 mm in the holotypes), relative leg length (femur 1/carapace width: ~ 1 versus 1.1), male chelicerae (not distinguishable), and procursus (that of *jalisco* is said to be "thinner"; however, direct comparison reveals that this is not the case, and the shape of the *jalisco* procursus fits well into the range of shapes shown for *hesperia;* figs. 454–455, 459). However, the bulb of the *jalisco* holotype has a tiny sclerotized ridge dorsally (arrow in fig. 458) that is absent in all the *hesperia* specimens studied. So, for the moment, this is the only character distinguishing the two species.

MALE (holotype): Carapace width 0.47; leg 1: 2.06 (0.59+0.16+0.51+0.49+0.31), tibia 2: 0.43, tibia 3: 0.39, tibia 4 missing; tibia 1 l/d: 8. Habitus, chelicerae, and general palpal morphology identical to *T. hesperia* (cf. figs. 448–452), also without stridulatory files on chelicerae. Procursus as in fig. 459. Bulb with dorsal sclerotized ridge (fig. 458). Sternum with pair of humps frontally, as in *T. hesperia* (cf. fig. 450). Legs without spines, without curved and vertical hairs; tarsus 1 with ~ 5 pseudosegments.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: MEXICO: *Jalisco*: type above.

PAPIAMENTA, NEW GENUS

TYPE SPECIES: *Pholcophora levii* Gertsch, 1982.

ETYMOLOGY: The generic name is derived from Papiamento, a language spoken on the Netherlands Antilles. Gender feminine.

DIAGNOSIS: Small pholcids (total length 1.5–2 mm), with short legs, globular opisthosoma, eight eyes, and stridulatory files on the chelicerae; distinguished from the similar genus *Pholcophora* and from other short-legged genera by the complex bulb and the almost absent procursus.

DESCRIPTION: Total length ~ 1.5–2 mm. Carapace with shallow but distinct thoracic groove, ocular area slightly elevated, with eight eyes, AME smallest; distance PME-ALE relatively small (~ 40–50% of PME diameter). Male clypeus unmodified. Male chelicerae with pair of large apophyses proximally, with stridulatory ridges laterally (figs. 468, 470). Male sternum without humps. Male palpal coxa without retrolateral apophysis, femur almost cylindrical, tibia globular, procursus very short and simple (fig. 464); bulb complex, with several sclerotized and unsclerotized elements in embolar division (figs. 467, 473); tarsal organ capsulate with small opening (examined: *P. levii* female). Legs very short (leg 1 about 2.5 × body length; tibia 1 l/d: 9–10), leg formula 4123; legs without spines and curved hairs, with some vertical hairs on tibiae; retrolateral trichobothrium of tibia 1 very distal (at 60–66%); tarsus 1 with only ~ 6 pseudosegments. Opisthosoma globular, with darker spots dorsally. Male epigastric system not examined; ALS with piriform gland spigots (examined: *P. levii* female: fig. 154), other spinnerets typical for family (fig. 142).

Sexual dimorphism slight; epigynum extremely simple externally; I could not find pore plates.

MONOPHYLY: The two species included share the extremely short and simple procursus, and the complex bulb.

GENERIC RELATIONSHIPS: The genus may be close to several other genera of short-legged pholcids with globular opisthosoma, especially to *Pholcophora*, with which it shares a very simple procursus, long proximal apophyses on the male chelicerae, and the shallow thoracic groove. The genitalia in these genera, however, are quite different (in the case of *Pholcophora*, the bulb and the palpal femur).

DISTRIBUTION/COMPOSITION: Only two described species, from the Netherlands Antilles.

Papiamenta savonet, new species

Figures 460–467

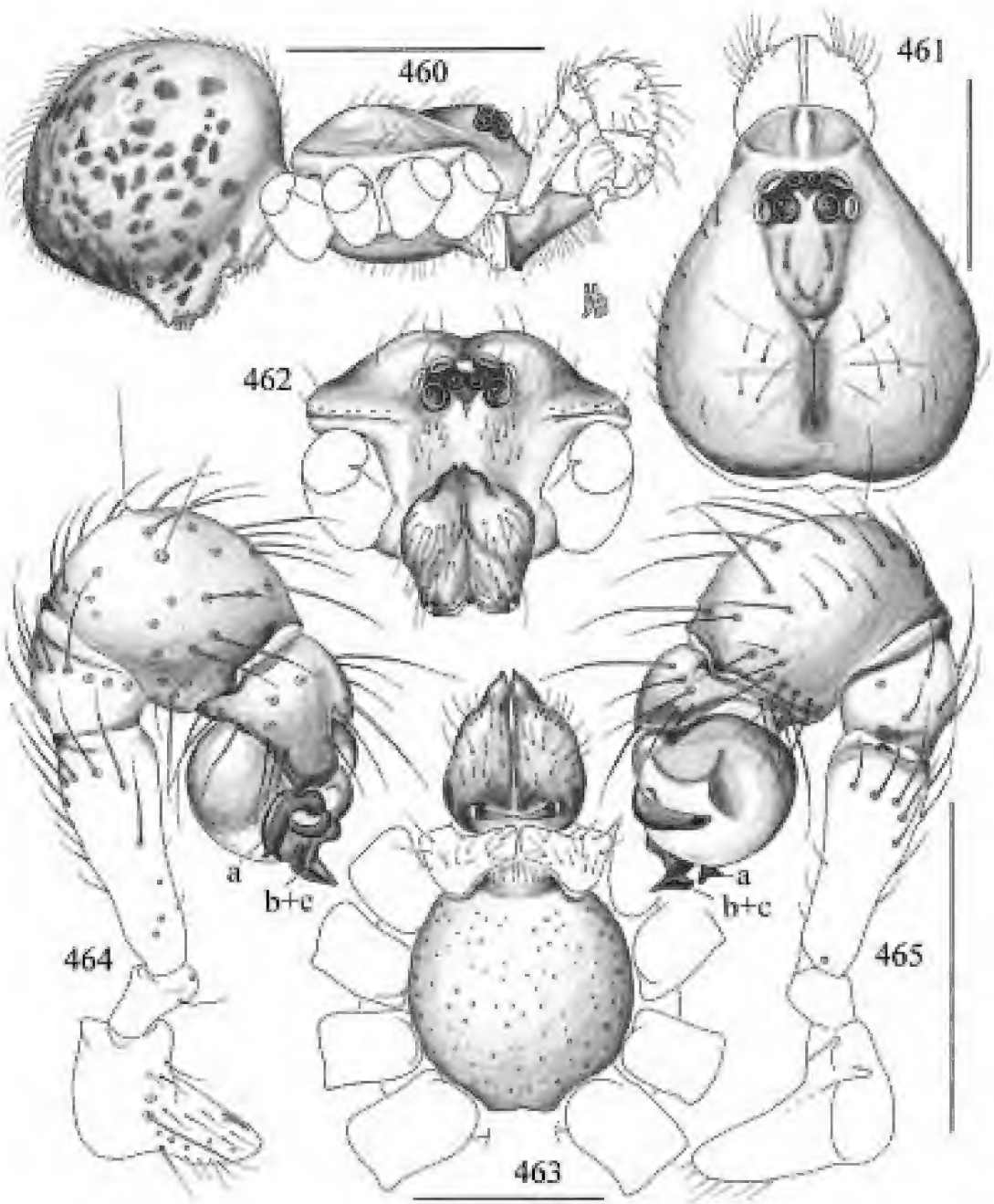
Pholcophora levii Gertsch, 1982: 99–100 (part of the records only).

TYPES: Male holotype, 2♀ paratypes from 3 km N Savonet, Curaçao, Netherlands Antilles; "stones," Dec. 28, 1962 (H. & L. Levi), in MCZ.

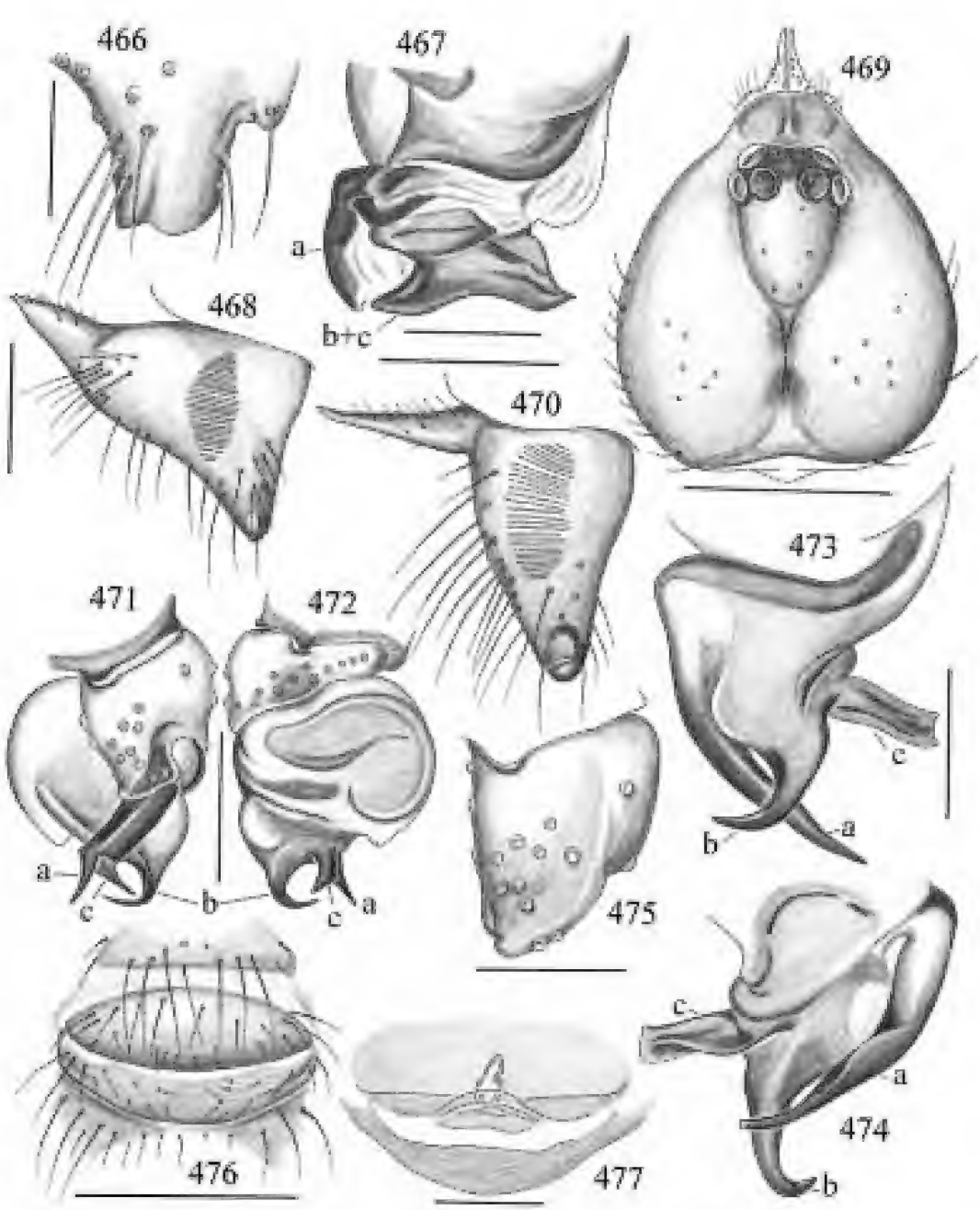
ETYMOLOGY: Named for the town close to the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Closely related to *P. levii*, distinguished by the proximally much thicker male cheliceral apophyses (compare fig. 468 with 470; 461 with 469), and the bulbal apophyses (compare figs. 467, 473); the females are apparently not distinguishable.

MALE (holotype): Total length 2.0, carapace width 0.85, leg 1: 4.4 (1.16+0.32 +1.13+1.26+0.52), tibia 2: 0.94, tibia 3: 0.90, tibia 4: 1.35; tibia 1 l/d: 9. Habitus as in fig. 460. Entire prosoma orange-ochre, carapace with shallow but distinct thoracic groove (fig. 462), eight eyes on hardly elevated ocular area (figs. 460–461); distance PME-ALE about 50% of PME diameter. Sternum pale ochre, without anterior humps. Chelicerae with relatively huge cheliceral apophyses (figs. 462–463, 468), with stridulatory files (fig. 468; pick is a modified hair proximally on femur). Palps as in figs. 464–465, coxa without retrolateral apophysis, femur cylindrical, only slightly widened distally; tibia almost globular; procursus extremely simple, almost nonexistent (figs. 464, 466); bulb complex, consisting of globular part and two apophyses, one of them ("a") movable, the other one ("b+c") bifid (figs. 464–465, 467). Legs without spines and curved hairs, with some very short vertical hairs on tibiae; retrolateral trichoboth-



Figs. 460–465. *Papiamenta savonet*, n. gen., n. sp., male. **460**. Habitus, lateral view. **461–463**. Prosoma, dorsal, frontal, and ventral views. **464**. Right palp, retrolateral view. **465**. Right palp, prolateral view. (The bulbal structures a, b, c, are labeled to ease comparison with figs. 467, 471–474.) Scale lines: 1.0 mm (460), 0.5 mm (461–465).



Figs. 466–477. *Papiamenta* spp. 466–468. *P. savonet*, n. gen., n. sp., male. **466**. Right procursus, retrolaterodorsal view. **467**. Bulbal projections (right bulb), dorsal view. **468**. Chelicerae, lateral view. 469–477. *P. levii* (Gertsch). **469**. Male prosoma, dorsal view. **470**. Male chelicerae, lateral view. **471–472**. Right cymbium with procursus and bulb, retrolateral (471) and prolateral (472) view. **473–474**. Bulbal projections (right bulb), dorsal (473) and ventral (474) view. **475**. Right cymbium with procursus, retrolateral view. **476**. Epigynum, ventral view. **477**. Epigynum, dorsal view. (The bulbal structures a, b, c, are labeled to ease comparison among figures). Scale lines: 0.5 mm (469, 476), 0.2 mm (468, 470–472, 477), 0.1 mm (466–467, 473–475).

rium of tibia 1 at 66%; tarsus 1 with ~ 5–6 pseudosegments.

FEMALE (paratypes): Total length 2.3; tibia 1: 1.13, 1.19; without vertical hairs on tibiae. Epigynum apparently indistinguishable from *P. levii* (cf. figs. 476–477).

DISTRIBUTION: Known only from type locality (see Remark under *P. levii*).

MATERIAL EXAMINED: NETHERLANDS ANTILLES: Curaçao: 3 km N Savonet: types above.

Papiamenta levii (Gertsch, 1982), new combination

Figures 3, 142, 154, 469–477

Pholcophora levii Gertsch, 1982: 99–100 (part; see *P. savonet*, above), figs. 12–13, 22–24.

TYPES: Male holotype and female from Piscadera Baai, Curaçao, Netherlands Antilles; "dump," Dec. 20, 1962 (H. W. Levi), in MCZ (examined).

DIAGNOSIS: Closely related to *P. savonet*, distinguished by the more slender male cheliceral apophyses (compare fig. 468 with 470; fig. 461 with 469), and the bulbal apophyses (compare figs. 467, 473); the females are apparently not distinguishable.

MALE (holotype; see also Gertsch, 1982): Carapace width 0.79; tibia 1: 1.07. Habitus and prosoma shape as in *P. savonet* (cf. figs. 460–463); distance PME-ALE about 40% of PME diameter. Chelicerae with long frontal apophyses and stridulatory files laterally (fig. 470; pick is a modified hair proximally on femur, not on trochanter as noted in Gertsch, 1982). Palps in general as in *P. savonet* (cf. figs. 464–465); procursus extremely simple, almost nonexistent (figs. 471, 475) [note that Gertsch's (1982) fig. 14 is misleading, as it shows one of the bulbal apophyses as if it were the procursus]; bulb complex, consisting of globular part and three apophyses, one of them ("a") easily movable, describing half circle around other apophyses (figs. 471–474). Sternum without anterior humps. Legs without spines and curved hairs, with some vertical hairs on tibiae 1 and 2.

Measurements of another male: total length 1.6, carapace width 0.80; leg 1: 4.17 (1.20+0.22+1.12+1.24+0.39), tibia 2: 0.97, tibia 3: 0.93, tibia 4: 1.31; tibia 1 l/d: 10; retrolateral trichobothrium of tibia 1 at 60%; tarsus 1 with ~ 6 pseudosegments.

FEMALE: Total length (N = 10) 1.9–2.5 ($\bar{x}$ = 2.2); tibia 1 (N = 10) 1.06–1.19 ($\bar{x}$ = 1.12); without vertical hairs on tibiae. Epigynum extremely simple, as in fig. 476, internally as in fig. 477; I could not see pore plates.

DISTRIBUTION: Known only from Curaçao (Netherlands Antilles).

MATERIAL EXAMINED: NETHERLANDS ANTILLES: Curaçao: Piscadera Baai: types above; SE airport, Dec. 20, 1962 (H. & L. Levi & B. de Jong), 1♂ 10♀ in MCZ; S slope Veeris Berg, Dec. 20, 1962 (H. Levi), 1♂ 19♀ in MCZ; Coral Specht, 3 km E Willemstad, Feb. 9–15, 1987 (W. E. Steiner & J. M. Swearingen), "mesquite-acacia desert scrub near coast," 3♂ 1♀ 1 juvenile in USNM.

REMARK: The MCZ has two more vials, from "Grote Berg" and "Sint-Nicolaas, St. Martha Baai" (see data in Gertsch, 1982), and the USNM has one more vial from Boca San Pedro, Feb. 10, 1987 (W. E. Steiner & J. M. Swearingen); however, these contain only females, and since females of the present species and *P. savonet* are apparently indistinguishable, they cannot unambiguously be assigned to any of the two species.

CHISOSA, NEW GENUS

TYPE SPECIES: *Pholcophora diluta* Gertsch and Mulaik, 1941.

ETYMOLOGY: The generic name is derived from the Chisos Mountains in Big Bend National Park, Texas. Gender feminine.

DIAGNOSIS: Tiny pholcids (total length ~ 1.2–1.4 mm) with short legs, globular opisthosoma, without thoracic groove, with eight eyes, stridulatory ridges on male chelicerae; distinguished from other North American short-legged genera (*Pholcophora*, *Tolteca*) by the distally enlarged male palpal femur and the large and complex procursus.

DESCRIPTION: Total length ~ 1.2–1.4 mm. Carapace light ochre, without thoracic groove; ocular area hardly elevated (fig. 478), with eight eyes, AME only slightly smaller than others (fig. 481); distance PME-ALE small (~ 25% of PME diameter). Male clypeus unmodified. Male chelicerae with one (*C. diluta*) or two (*C. baja*) pairs of frontal apophyses, with stridulatory ridges laterally. Sternum without anterior humps. Male

palpal coxa without retrolateral apophysis, femur relatively large, conspicuously widened distally; procursus relatively large and complicated. Tarsal organ exposed (examined: *C. diluta*). Bulb with relatively simple embolar division. Legs short (leg 1 about 3–3.5 × body length; tibia 1 l/d: 14–21), leg formula 1423 in *C. diluta*, 4123 in *C. baja*; legs without spines, without curved and vertical hairs; retrolateral trichobothrium on tibia 1 very distal (at 63% in *C. diluta*, not seen in C. *baja*); tarsus 1 with ~ 5 pseudosegments. Opisthosoma globular, monochromous; male epigastric system not examined; ALS with piriform gland spigots (examined: *C. diluta* female: fig. 151). Sexual dimorphism slight (*C. baja* female unknown).

MONOPHYLY: The two species included share the complex, large procursus and the distally widened male palpal femur.

GENERIC RELATIONSHIPS: The genus may be close to several other genera of short-legged pholcids with globular opisthosoma, especially with *Tolteca* which is similar in habitus and geographically close, and with *Aucana* (a mainly Chilean genus!), which shares the exposed tarsal organ and the absence of epiandrous spigots.

DISTRIBUTION/COMPOSITION: Only two species described, from Texas (USA), and Baja California Norte (Mexico).

Chisosa diluta (Gertsch and Mulaik, 1941), new combination

Figures 151, 478–489

Pholcophora diluta Gertsch and Mulaik, 1941: 320, figs. 27–28. – Gertsch, 1982: 100, 102, figs. 19–21, 28–30.

TYPES: Female holotype, 5♀ paratypes from Hot Springs, Brewster County, Texas, USA; June 7–10, 1938 (D. & S. Mulaik), in AMNH, examined.

DIAGNOSIS: Easily distinguished from *C. baja* by the shape of the procursus (compare figs. 486, 491), and the single pair of apophyses on the male chelicerae (figs. 480, 484).

MALE (Big Bend Nat. Park; see also Gertsch, 1982): Total length 1.4, carapace width 0.60; leg 1: 4.84 (1.25+0.24+1.41 +1.39+0.55), tibia 2: 1.04, tibia 3: 0.84, tibia 4: 1.29; tibia 1 l/d: 21. Habitus and prosoma shape as in figs. 478–481; distance PME-ALE about 25% of PME diameter. Prosoma light ochre, only procursus and chelicerae with darker structures. Chelicerae with stridulatory files (fig. 484). Procursus relatively huge and complicated (figs. 482–483, 485–486). Sternum without anterior humps. Legs monochromous light ochre; without spines, without curved and vertical hairs; retrolateral trichobothrium on tibia 1 at 63%; tarsus 1 with ~ 5 pseudosegments. Opisthosoma globular (fig. 478), monochromous ochre-gray; epigastric system not studied.

FEMALE (Big Bend Nat Park): Total length 1.76–1.82; tibia 1 (N = 4) 1.14–1.31 ($\bar{x}$ = 1.25). Tarsal organ exposed. Epigynum with pair of sclerotized pockets laterally (figs. 487–488), possibly to accommodate the male cheliceral apophyses during copulation; internal genitalia as in fig. 489, with roundish pore plates. ALS apparently with piriform gland spigots (most spigots in female examined in SEM were broken).

DISTRIBUTION: Known only from along river in Big Bend National Park, Brewster County, Texas, USA.

MATERIAL EXAMINED: USA: *Texas*: Brewster County: types above; Big Bend Nat. Park, Santa Elena Region, Aug. 24, 1967 (W. J. Gertsch & R. Hastings), 2♂ 4♀ in AMNH.

Chisosa baja (Gertsch, 1982), new combination

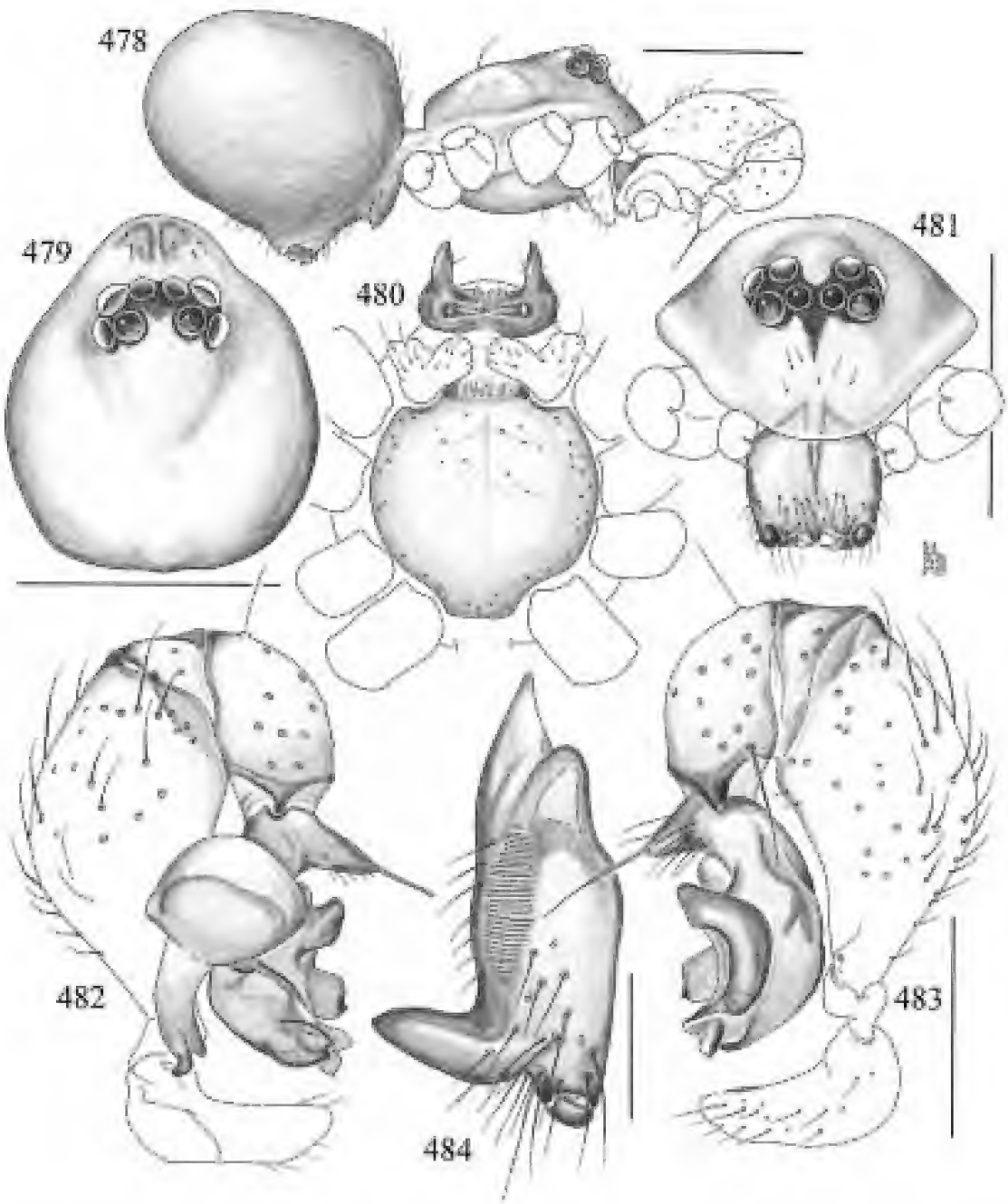
Figures 490–494

Pholcophora baja Gertsch, 1982: 102, figs. 37–39.

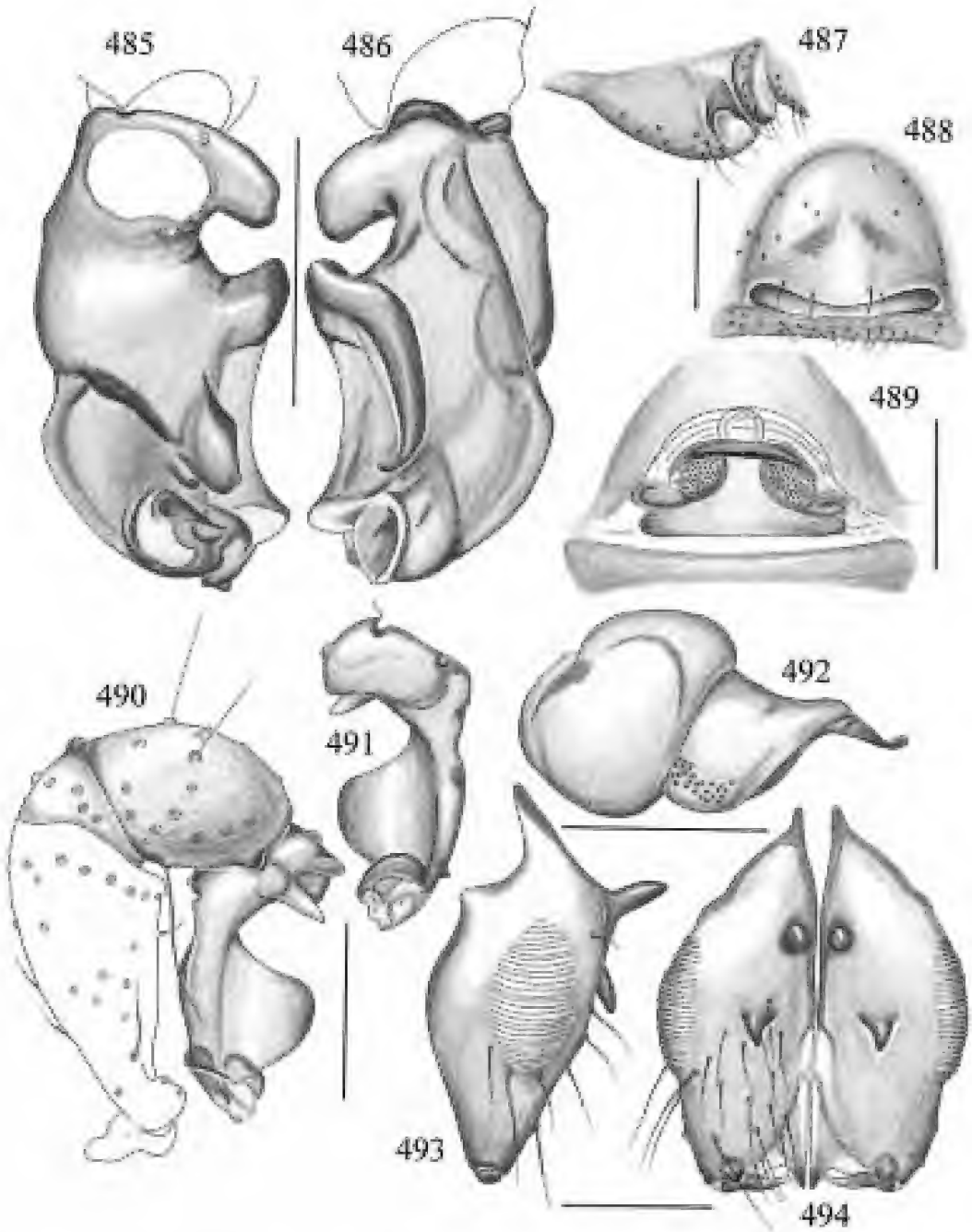
TYPE: Male holotype from Salsipuedes Island, Gulf of California, Baja California Norte, Mexico; May 21, 1962 (R. E. & A. E. Ryckman), in AMNH (examined).

DIAGNOSIS: Easily distinguished from *C. diluta* by the broad, curved flap dorsally on the procursus (figs. 490–491), and the two pairs of apophyses frontally on the chelicerae (figs. 493–494).

MALE (holotype; see Gertsch, 1982, for general description): Total length 1.2, carapace width 0.48 (not 0.25 as in original description!); leg 1: 3.55 (0.90+0.19+0.94+ 0.94+0.58), tibia 2: 0.81, tibia 3: 0.61, tibia 4: 0.97; tibia 1 l/d: 14. Habitus and prosoma shape similar to *C. diluta* (cf. figs. 478–481); distance PME-ALE about 25% on PME di-



Figs. 478–484. *Chisosa diluta* (Gertsch), male. **478**. Habitus, lateral view. **479–481**. Prosoma, dorsal, ventral, and frontal views. **482**. Left palp, prolateral view. **483**. Left palp, retrolateral view. **484**. Chelicerae, lateral view. Scale lines: 0.5 mm (478–481), 0.3 mm (482–483), 0.1 mm (484).



Figs. 485–494. *Chisosa* spp. 485–489. *C. diluta* (Gertsch). **485**. Left procursus, prolateroventral view. **486**. Left procursus, retrolaterodorsal view. **487–488**. Epigynum, lateral and ventral views. **489**. Epigynum, dorsal view. 490–494. *C. baja* (Gertsch), male holotype. **490**. Right palp without bulb, retrolateral view. **491**. Right cymbium with procursus, prolateral view. **492**. Right genital bulb, ~ prolateral view. **493–494**. Chelicerae, lateral and frontal views. Scale lines: 0.2 mm (485–492), 0.1 mm (493–494).

ameter. Prosoma and legs ochre-yellow. Carapace without thoracic groove, sternum without anterior humps. Chelicerae with stridulatory files laterally and two pairs of characteristic blackish apophyses frontally (figs. 493–494). Palps as in fig. 490, cymbium with dorsal apophysis and procursus with large, slightly curved flap dorsally and complicated distal structures (figs. 490–491). Legs without spines, without curved and vertical hairs. Opisthosoma slightly higher than long (0.85 versus 0.75), monochromous ochre.

FEMALE: Unknown.

DISTRIBUTION: Only known from type locality.

MATERIAL EXAMINED: MEXICO: *Baja California Norte*: Salsipuedes Island: type above.

PRISCULA SIMON, 1893

Priscula Simon, 1893b: 477–478 (type species by original designation *P. gularis* Simon, 1893; examined). – Brignoli, 1981: 95–96. – González-Sponga, 1996: 124–128. – Huber, 1997b: 598–599.

Blechroscelis Simon, 1893b: 479–483 (type species by original designation *Pholcus annulipes* Keyserling, 1877; examined). NEW SYNONYMY.

Hypsorinus Chamberlin, 1916: 224 (type species by original designation *H. binghamae* Chamberlin, 1916; examined). First synonymized by Huber et al. (1999).

JUSTIFICATION OF SYNONYMY: The type species of *Blechroscelis* (*Pholcus annulipes* Keyserling) is redescribed below, and is clearly congeneric with the type species of *Priscula* (*P. gularis* Simon) which is also redescribed below.

DIAGNOSIS: Large (total length ~ 3.5–7 mm), dark-colored pholcids. Distinguished from most other New World genera by their size and the higher-than-long opisthosoma; from *Physocyclus* and *Artema* by the single pair of frontal apophyses on the male chelicerae; from *Ixchela* and *Aymaria* by the male palp (absence of retrolateral coxal apophysis, distally enlarged femur, rather complex procursus with "brush").

DESCRIPTION: Total length ~ 3.5–7 mm. Carapace with distinct thoracic groove, ocular area moderately elevated, usually with eight eyes (AME missing in *P. ulai* González-Sponga, *salmeronica* González-Sponga); if present, AME considerably smaller than others (e.g., figs. 495, 513); distance PME-ALE varying widely (~ 40–120% of PME diameter). Male clypeus unmodified. Posterior border of sternum either straight or produced into one or two lobes. Male chelicerae usually with pair of simple frontal apophyses distally, missing in *P. limonensis* González-Sponga and *lagunosa* González-Sponga; without stridulatory ridges. Male palps (especially femur) large in relation to overall size; coxa without retrolateral apophysis, femur very strong, in some species with ventral sclerotized rim distally; procursus variable in shape, with complex distal system of apophyses, flaps, and membranous, hairlike structures (brush; e.g., figs. 508, 516, 525, etc.); bulb with spiraling, strong distal apophysis. Tarsal organ exposed, conspicuously elevated (examined: *P. binghamae*, *ulai*: fig. 96). Legs medium-long (leg 1 about 5–13 × body length), usually very strong (tibia 1 l/d: 23–63), leg 1 always longest, leg 2 usually longer than leg 4, leg 3 shortest; often with dark rings; legs without spines, sometimes with many curved hairs (on femora, tibiae, and metatarsi), and sometimes with several vertical hairs (never in high density); retrolateral trichobothrium of tibia 1 proximal (at 5–10%); cuticle of tarsus broken into many seemingly irregular plates (fig. 101). Opisthosoma higher than long, sometimes angular behind, dorsally with dark spots and often also white spots. Male gonopore without epiandrous spigots (examined: *P. binghamae*, *ulai*, one undescribed species: fig. 140). ALS with piriform gland spigots (about six; examined: *P. binghamae*, *ulai*, one undescribed species; figs. 166–167), other spinnerets typical for family.

Sexual dimorphism slight; females with shorter legs, unmodified chelicerae, with greater variation in opisthosoma size. Epigynum simple dark sclerotized plate; internally with pair of roundish to oval dorsal pore plates, frontally with large valve.

MONOPHYLY: Although the genus is easily diagnosed, it is characterized primarily by plesiomorphies. The only synapomorphy seems to be the tarsal organ, which is exposed but situated on a high turret (fig. 96).

GENERIC RELATIONSHIPS: The genus shares

with *Physocyclus* and *Artema* the brushlike element distally on the procursus, but this may be plesiomorphic (a synapomorphy of holocnemines). The general similarity between *Physocyclus* and *Priscula* led Brignoli (1981) to synonymize the two genera. This was not accepted by González-Sponga (1996) (who lists Brignoli's paper in the references, but never refers to it in the text), and criticized by Huber (1997b) on the basis that the two genera show some very consistent differences, and are geographically strictly apart. The cladistic analysis suggests that *Priscula* is indeed close to *Physocyclus*, but none of the synapomorphies is very compelling, while *Artema* has a procursus very similar to that of *Physocyclus* (see Characters Scored section above). The traditional separation of *Physocyclus* and *Priscula* is certainly more informative and is therefore maintained. Moreover, *Priscula* shows some affinities to New World genera (e.g., the thoracic groove, reduction of epiandrous spigots, exposed tarsal organ), while *Physocyclus* and *Artema* rather have thoracic pits like the Old World *Holocnemus* group. The phylogenetic position of *Priscula* is thus regarded as still ambiguous.

NATURAL HISTORY: Simon (1893b: 478) gives the following brief account: "sur les bambous . . . toile napiforme bombée, de tissu très lâche . . . grand résceau irrégulier." González-Sponga (1996) collected *Priscula* mainly in shady areas close to the ground, under logs, leaves, and mosses. He reports the number of eggs in two egg sacs (60, 162).

DISTRIBUTION: Most known species are from high-altitude locations in the Andes, from northern Argentina to Venezuela (map 3). *Priscula taruma*, n. sp., from Guyana presently marks the northeastern limit.

COMPOSITION: The genus includes 17 nominal species (*P. paeta* Simon is a nomen dubium: González-Sponga, 1996; Huber, 1997b). Four of the species recently described by González-Sponga (1996) were not available to me: *P. lagunosa*, *piedraensis*, *limonensis*, *salmeronica*. The remaining 13 species are treated herein (six of them are newly described). Apart from that I have seen several additional species, mostly from northern Peru (in MUSM, CCR).

Pholcus tigrinus Taczanowski, which Simon (1893b) thought was "*probablement*" a *Priscula*, was originally described as resembling *Pholcus phalangioides*, but with a more pointed opisthosoma, in contrast to the higher-than-long opisthosoma of *Priscula*. I strongly suspect it to be a synonym of *Smeringopus pallidus* (Blackwall), based on Taczanowski's (1874) description of the "*belle figure*" on the opisthosoma: "composée de 4–6 paires de taches obliques imitant une feuille pennée"; this is a pattern typical for most species of *Smeringopus*, and *S. pallidus* is the only representative of the genus in the New World, and is a common synanthropic species. The type material (12 syntypes) is apparently lost. It was sent to Hamburg in 1974, but was apparently never returned (T. Huflejt, personal commun.).

Map 3. Known distribution of the genus *Priscula* Simon.

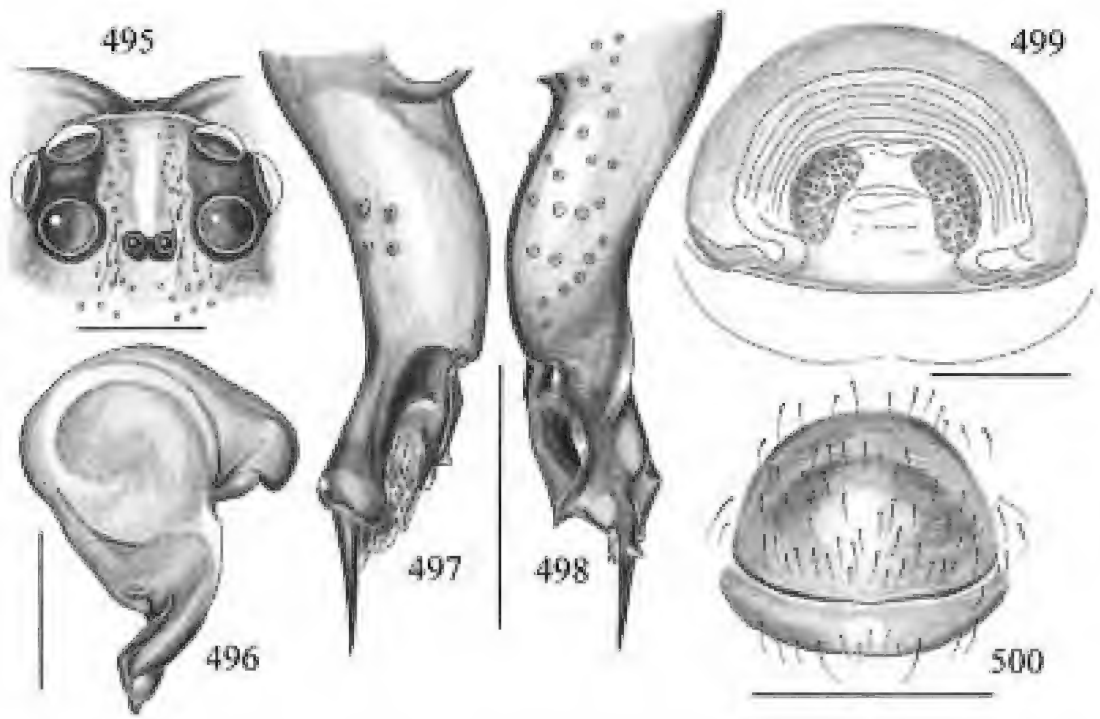
Priscula gularis Simon, 1893

Figures 495–500

Priscula gularis Simon, 1893a: 319. – Simon, 1893b: 477–478, figs. 442(?), 449(?). – Huber, 1997b: 595–597, figs. 17–19.

Physocyclus gularis: Brignoli, 1981: 94–97, figs. 8–10, 25.

TYPES: Male lectotype, 1♀ paralectotype from Quito, Ecuador; date and collector not given, in MNHN (9762), examined.



Figs. 495–500. *Priscula gularis* Simon. **495**. Male ocular area, frontal view. **496**. Left genital bulb, ~ dorsal view. **497**. Left procursus, prolateral view. **498**. Left procursus, retrolateral view. **499**. Epigynum, dorsal view. **500**. Epigynum, ventral view. Scale lines: 1.0 mm (500), 0.4 mm (495–499).

DIAGNOSIS: Distinguished from congeners primarily by the shape of the procursus with its distinctive distal spine (figs. 497–498), and by the shape of the bulbal apophysis (fig. 496).

MALE (Baños; for redescription of type material see Huber, 1997b): Total length 4.0, carapace width 2.0; leg 1: 35.3 (8.7+0.9 +9.3+14.1+2.3), tibia 2: 6.9, tibia 3: 5.1, tibia 4: 6.9; tibia 1 l/d: 45. Habitus similar to *P. binghamae* (cf. fig. 501; see also figs. 17a–b in Huber, 1997b); carapace ochre, darker median spot and lateral margins, with deep thoracic groove; ocular area brown, slightly higher than in *P. binghamae*, eight eyes as in fig. 495; distance PME-ALE about 60% of PME diameter. Sternum ochre, brown-speckled at bases of legs and anteriorly, posterior border straight; chelicerae brown with pair of blackish frontal apophyses as in *P. pallisteri* (cf. fig. 515, apophyses minimally thinner and more laterally; see also fig. 19a in Huber, 1997b). Palps in general as in *P. binghamae* (cf. figs. 505–506), but femur distally with hardly protruding ventral rim, and procursus and bulb significantly different (figs. 496–498). Legs light brown, with darker rings on femora (subdistally) and tibiae (subproximally, subdistally); almost all hairs on legs missing; retrolateral trichobothrium of tibia 1 at 7%. Opisthosoma length 2.4, height 2.3, slightly angular, gray, dorsally covered with blackish spots and white dots in lines and bands; genital plate light brown.

VARIATION: Tibia 1 in second male from Baños: 9.7. Lectotype and males from "Narigual" significantly larger (tibia 1: 11.4–12.0), but genitalia not distinguishable in shape.

FEMALE: Tibia 1 (N = 5) 7.5–10.3 ($\bar{x}$ = 8.8). In general very similar to male, but opisthosoma higher and more rounded. One female with dark rings also medially on tibiae. Epigynum as in fig. 500, light brown; dorsal view as in fig. 499.

DISTRIBUTION: Known only from Ecuador.

MATERIAL EXAMINED: ECUADOR: Quito:

types above; "Narigual," no further collection data, 3♂ 2♀ 2 juveniles in MNHN (10289); Baños, 1900–2000 m elev., Nov. 16–17, 1937 (W. Clarke-Macintyre), 2♂ 2♀ 13 juveniles in AMNH. Baños, 1800 m elev., Aug. 10–22, 1937 (E. Brundage), 1♀ assigned tentatively, in USNM.

Priscula binghamae (Chamberlin, 1916)
Figures 501–512

Hypsorinus binghamae Chamberlin, 1916: 224–226, pl. 13: figs. 1–9, pl. 14: figs. 1–7.
Physocyclus binghamae: Brignoli, 1981: 97, figs. 11–13, 19–20.
Crossopriza saltensis Mello-Leitão, 1941: 109, pl. 7: fig. 7 (first synonymized by Huber et al., 1999)
Hypsorinus conwayi Mello-Leitão, 1947b: 162–163, figs. 8–9; NEW SYNONYMY.
Systenita conwayi: Brignoli, 1981: 97; 1983: 681.
Priscula binghamae: Huber et al., 1999: 6–7, figs. 13–17.

JUSTIFICATION OF SYNONYMY: The type specimens of *Hypsorinus conwayi* were compared with the female paratypes of *Hypsorinus binghamae* (the male holotype is lost; see Note below) and the original description of the male: there were no relevant differences.

TYPES: *Hypsorinus binghamae*: male holotype (not examined; see Note below), 1♀ paratype and 2 juveniles (examined) from Huadquina (near Machu Picchu, 13°07′S, 72°39′W), Dept. Cuzco, Peru; 5000 ft elev., July 1911, (collector not given), in MCZ. *Crossopriza saltensis*: female holotype from Santa Barbara, Dept. Salta, Argentina; no date (M. Biraben), in MLP (14625), examined (see Huber et al., 1999). *Hypsorinus conwayi*: 1♂ 1♀ syntypes, and 1 juvenile, from "Hampusa & above," Bolivia (not Guyana, as in Mello-Leitão, 1947b!); 13–17000 ft elev. (not 1700 ft as in Mello-Leitão, 1947b!), Mar. 10, 1899 (M. Conway), in BMNH (1949.9.14.1), examined.

NOTE: The male holotype of *H. binghamae* could not be found at the MCZ. However, Chamberlin's (1916) figures 3 and 6 of the male chelicerae and pedipalp fit perfectly the material described here, and the present species is so far the only representative of the genus found south of central Peru.

DIAGNOSIS: Distinguished from congeners by the shape of the procursus (semitransparent proximal protrusion, triangular distal flap, figs. 508–509), by the shape of the bulbal apophysis (fig. 507), and the lateral position of the male cheliceral apophyses (fig. 503; similar only in *P. tunebo*, cf. fig. 554).

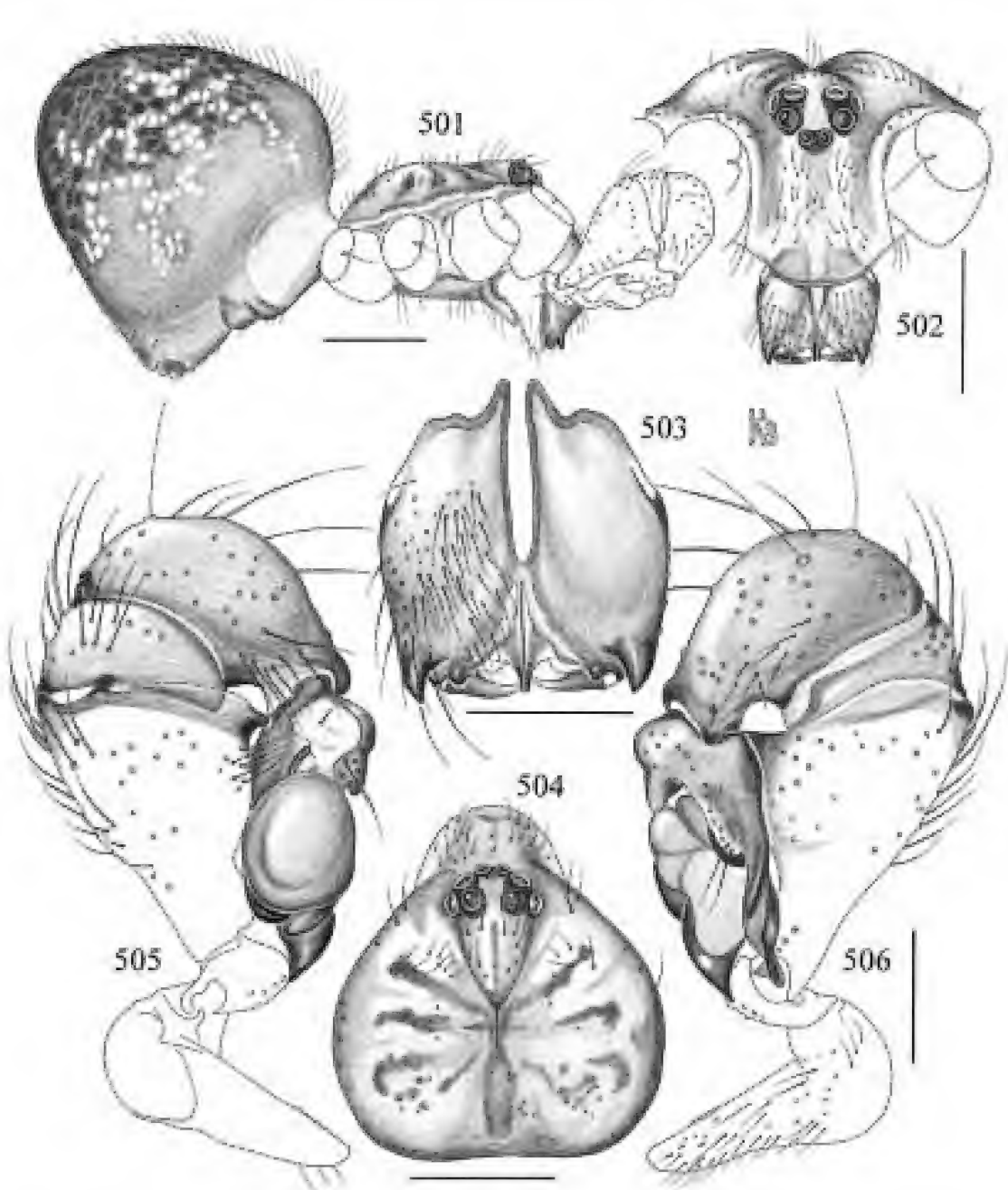
MALE (La Paz, Bolivia) (see also detailed original description by Chamberlin, 1916): Total length 7.1, carapace width 2.9; leg 1: 38.6 (9.3+1.3+9.9+13.3+4.8), tibia 2: 6.8, tibia 3: 5.5, tibia 4: 7.5; tibia 1 l/d: 25. Habitus as in fig. 501; carapace light brown with darker spots laterally and medially, with deep thoracic groove (figs. 502, 504), ocular area light brown, darker medially and laterally, moderately elevated with eight eyes, AME very low (fig. 502); distance PME-ALE relatively small (~ 45% of PME diameter), sternum light brown with darker margins and pattern, posterior border barely curved (fig. 510); chelicerae light brown with pair of frontal apophyses laterally (fig. 503). Palps as in figs. 505–506, light brown, procursus and bulb sclerites dark brown to black; coxa without retrolateral apophysis, femur proximally with retrolateral apophysis, distally with black rim projecting ventrally (fig. 505), procursus with dorsal semitransparent protrusion proximally, prolateroventral brush, and complex system of apophyses and flaps distally (figs. 508–509); bulb with pointed, slightly spiraling apophysis (fig. 507). Legs light brown, with slightly darker rings on femora and tibiae (proximally, medially, and subdistally); legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 10%. Opisthosoma dark brownish-gray, with small black and white spots dorsally. Gonopore without epiandrous spigots. ALS with several piriform gland spigots.

VARIATION: Tibia 1 in 4 males: 7.3–11.9.

FEMALE (La Paz): Tibia 1 (N = 3) 6.5–10.5. In general very similar to male. Epigynum as in fig. 511; dorsal view as in fig. 512.

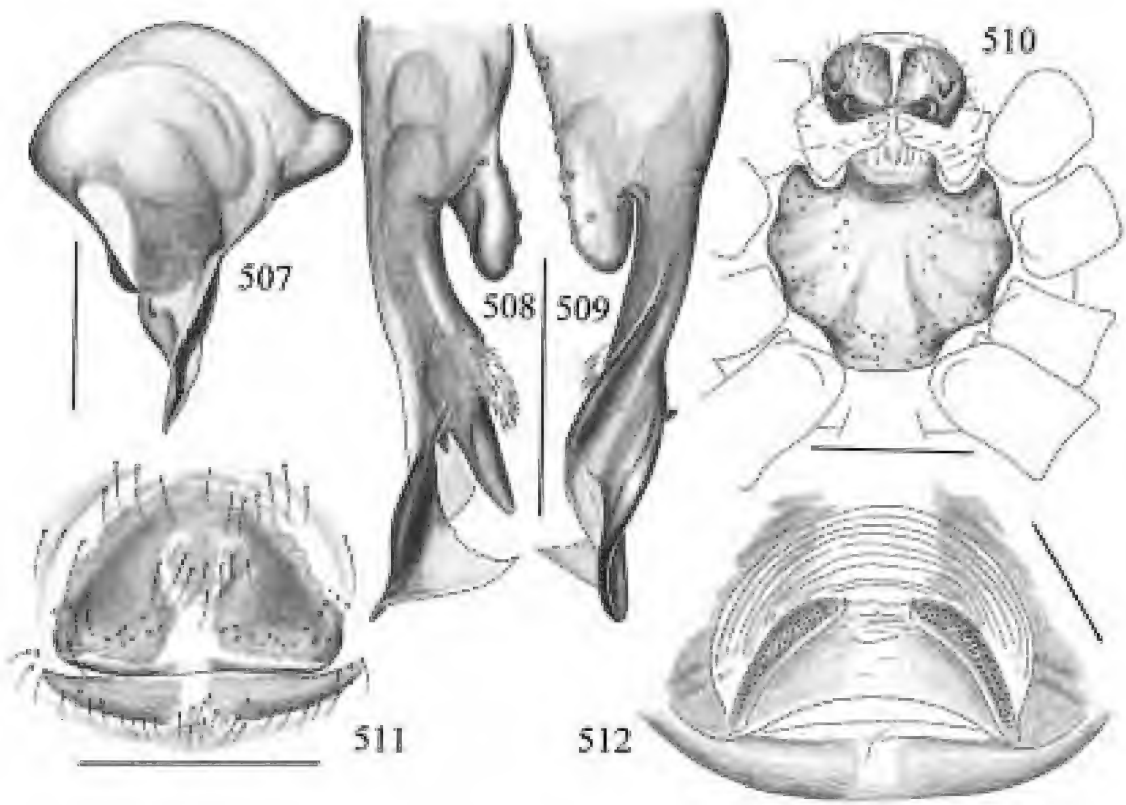
DISTRIBUTION: Known from northern Argentina, Bolivia, and southern Peru. Mello-Leitão (1947b) erroneously gives Guyana as type locality for *Hypsorinus conwayi*, an error that was then copied by Brignoli (1983).

MATERIAL EXAMINED: PERU: *Cuzco*: Huadquina: *Hypsorinus binghamae* female



Figs. 501–506. *Priscula binghamae* (Chamberlin), male. **501**. Habitus, lateral view. **502**. Prosoma frontal view. **503**. Chelicerae, frontal view. **504**. Prosoma, dorsal view. **505**. Left palp, prolateral view. **506**. Left palp, retrolateral view. Scale lines: 1.0 mm (501–502, 504), 0.5 mm (503, 505–506).

paratypes above; "Cuzco," 11100 ft elev., no date (K. Schmidt), 1♂ 4♀ in FMNH; near Calca, Hacienda Urco, in house, 9500 ft elev., Sept. 22, 1939 (K. Schmidt) 2♂ 2♀ in AMNH. *Ancash*: Huari, June 5, 1989 (A. Salas), 1♂ 1♀ in MUSM. BOLIVIA: *La Paz*: La Paz, house, 12000 ft elev., Apr. 1958–Apr. 1959 (5 vials) (R. Walsh), 4♂ 5♀ some juveniles in AMNH; "Hampusa & above": *Hypsorinus conwayi* types above. *Beni*: 16.8



Figs. 507–512. *Priscula binghamae* (Chamberlin). **507**. Left genital bulb, ~ dorsal view. **508**. Left procursus, prolateral view. **509**. Left procursus, retrolateral view. **510**. Male prosoma, ventral view. **511**. Epigynum, ventral view. **512**. Epigynum, dorsal view. Scale lines: 1.0 mm (510–511), 0.4 mm (507–509, 512).

mi SW Yucumo (~ 15°23′S, 66°59′W), ~ 500 m elev., Nov. 15–19, 1989 (J. Coddington, C. E. Griswold, D. Silva, S. Larcher, E. Peñaranda), 1♀ in USNM. ARGENTINA: *Salta*: Santa Barbara: *Crossopriza saltensis* type above.

Priscula pallisteri, new species

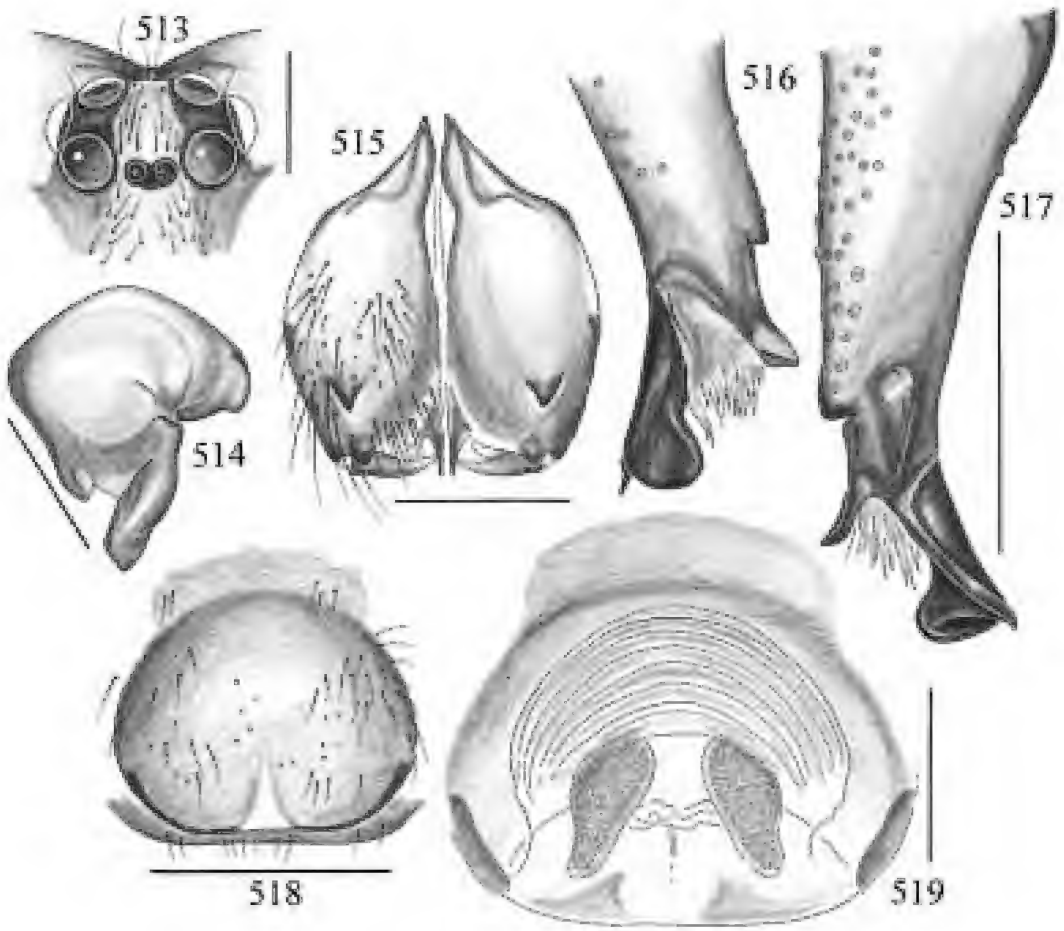
Figures 513–519

TYPES: Male holotype, 1♀ paratype from Tingo Maria, Dept. Huánuco, Peru; Oct. 25, 1946 (J. C. Pallister), in AMNH.

ETYMOLOGY: Named for the collector of the type material.

DIAGNOSIS: Distinguished from congeners primarily by the shape of the procursus (shape of base, shape of distal, rounded flap: figs. 516–517), and by the shape of the bulbal apophysis (fig. 514).

MALE (holotype): Total length 4.2, carapace width 2.0; leg 1: (10.9+1.1+10.9 +17.7, tarsus missing), tibia 2: 7.9, tibia 3: 5.5, tibia 4: 7.3; tibia 1 l/d: 51. Habitus similar to *P. binghamae* (cf. fig. 501); carapace light brown, darker laterally and medially, with deep thoracic groove; ocular area brown, slightly higher than in *P. binghamae*, eight eyes as in fig. 513, distance PME-ALE about 45% of PME diameter. Sternum orange to light brown, posterior border with pair of distinct lobes; chelicerae light brown with pair of blackish frontal apophyses (fig. 515). Palps in general as in *P. binghamae* (cf. figs. 505–506), only procursus and bulb significantly different (figs. 514, 516–517). Legs light brown, with slightly darker rings on femora (subdistally) and tibiae (proximally, subdistally); almost all hairs on legs missing; retrolateral trichobothrium of tibia 1 at 6%. Opisthosoma length 2.6, height 2.4; slightly



Figs. 513–519. *Priscula pallisteri*, n. sp. **513**. Male ocular area, frontal view. **514**. Left genital bulb, ~ dorsal view. **515**. Male chelicerae, frontal view. **516**. Left procursus, prolateral view. **517**. Left procursus, retrolateral view. **518**. Epigynum, ventral view. **519**. Epigynum, dorsal view. Scale lines: 1.0 mm (518), 0.5 mm (513–517, 519).

angular, pale gray with many dark spots dorsally, genital plate light brown, wide.

FEMALE (paratype): Total length 4.9; tibia 1: 9.1. In general very similar to male, but opisthosoma higher and more rounded. Epigynum as in fig. 518, light brown medially, dark brown laterally; dorsal view as in fig. 519.

VARIATION: Tibia 1 in male from Cueva de Lechuzas: 13.1; most specimens had also many white spots on the opisthosoma, arranged in lines or bands.

DISTRIBUTION: Known only from Tingo Maria, Dept. Huánuco, Peru.

MATERIAL EXAMINED: PERU: *Huánuco*: Tingo Maria: types above; Cueva de Lechuzas near Tingo Maria, Oct. 8, 1946 (J. C. Pallister), 2♂ 2♀ 3 juveniles in AMNH.

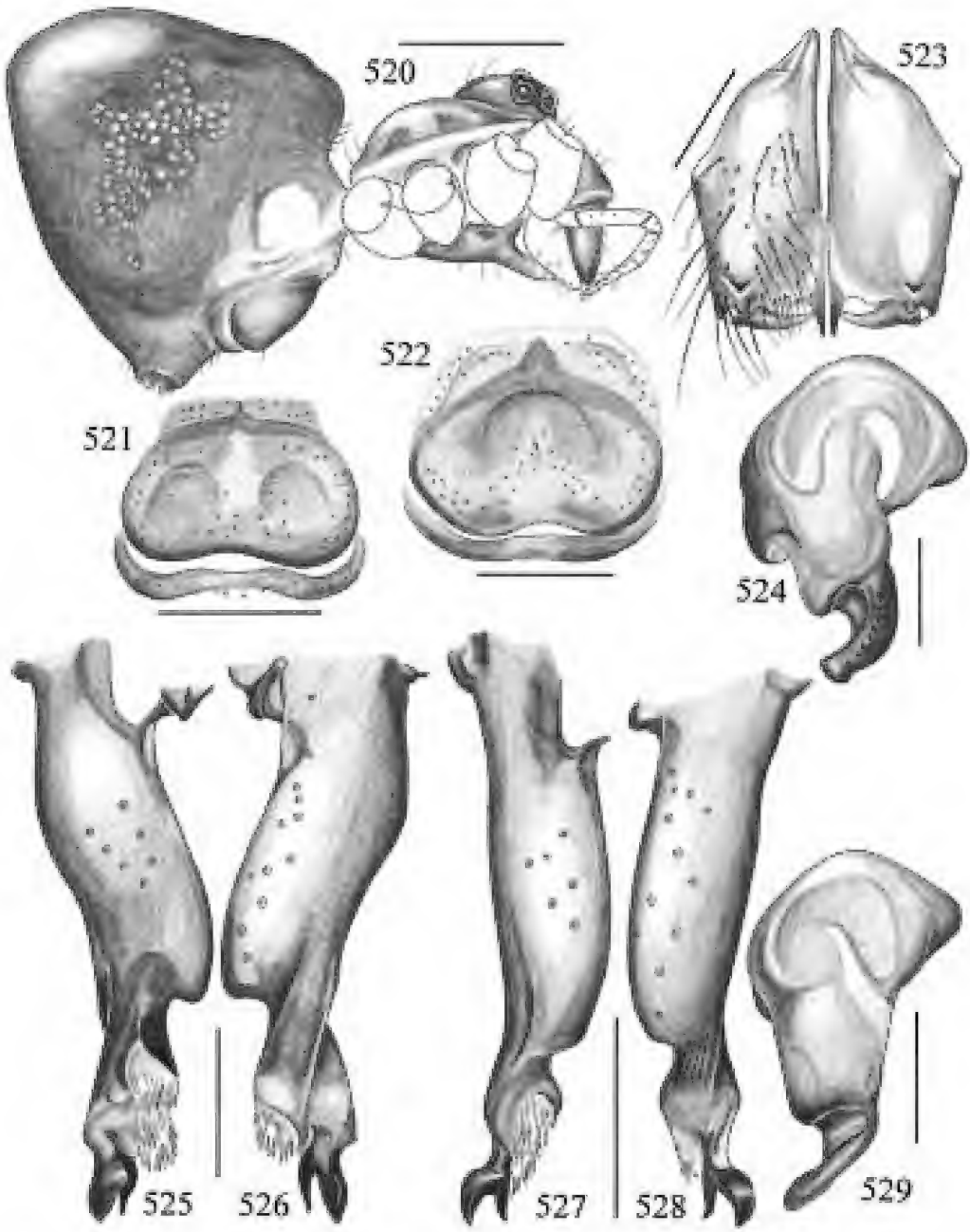
Priscula annulipes (Keyserling, 1877), new combination

Figures 520–526

Pholcus annulipes Keyserling, 1877: 4–6, pl. 7: figs. 1, 1a.

Blechroscelis annulipes: Simon, 1893b: 483 (see Notes below).

TYPES: Female lectotype (designated herein), 4♀ paralectotypes, and 2 penultimate males from St. Fé de Bogotá, Dept. Cundinamarca, Colombia; date and collector not



Figs. 520–529. *Priscula* spp. 520–526. *P. annulipes* (Keyserling). **520**. Female lectotype, habitus. **521**. Epigynum of paralectotype, ventral view. **522**. Epigynum of lectotype, ventral view. **523**. Male chelicerae, frontal view. **524**. Left genital bulb, ~ dorsal view. **525**. Left procursus, prolateral view. **526**. Left procursus, retrolateral view. 527–529. *P. venezuelana* Simon. **527**. Left procursus, prolateral view. **528**. Left procursus, retrolateral view. **529**. Left genital bulb, ~ dorsal view. Scale lines: 2.0 mm (520), 1.0 mm (521–522), 0.5 mm (523–529).

given, in BMNH (1890.7.1.8292-95, part), examined.

NOTES: The type vial apparently contains only some of the original specimens: the label says "8292-95 (part)." From Keyserling's (1877) original description it is highly probable that the specimens examined herein are in fact conspecific with, if not identical to what he was describing (high opisthosoma, femora with four dark rings: *annulipes*!, all femora of about same thickness, almost perfectly agreeing measurements). The fact that Simon chose "*B. annulipes* Keyserl." as type species for *Blechroscelis* makes his genus *Blechroscelis* a synonym of *Priscula*. Since both genera were proposed in the same publication, *Blechroscelis* could either be adopted to replace *Priscula* (which would completely change the traditional conception of both genera), or it could be dumped. The second option is here preferred (see Notes under *Mesabolivar* below for detailed discussion).

Another problem is the conspecificity of the male described herein with the female lectotype. The evidence (four dark rings on femora, geographic origin) is not unambiguous (legs with four dark rings on femora and tibiae are not unique to the species, see *P. ulai*, *huila*; several species are known to occur in small areas, e.g., *P. andinensis*, *ulai*, *piapoco*, *chejapi*, *piedraensis*, all from Dept. Mérida, Venezuela). The risk of erroneously assigning a heterospecific male to the female is herein preferred to the risk of creating a synonym. Future studies of Colombian material should easily solve this problem.

DIAGNOSIS: Distinguished from congeners (especially the closely related *P. venezuelana*) primarily by the shape of the procursus (position of dorsal projection, shape of distal fork: figs. 525–526), and by the shape of the bulbal apophysis (fig. 524).

MALE (Bogotá): Total length 5.3, carapace width 2.6; leg 1: 30.4 (7.7+1.2+7.5+10.7 +3.3), tibia 2: 6.0, tibia 3: 4.3, tibia 4: 5.2; tibia 1 l/d: 23. Habitus similar to *P. binghamae* (cf. fig. 501); carapace light orange-ochre, dark brown median stripe and lateral smudges, with deep thoracic groove; ocular area dark brown, slightly higher than in *P. binghamae*, eight eyes in position similar to *P. pallisteri* (cf. fig. 513, but distance PME-ALE about 110% of PME diameter), clypeus dark brown; sternum light orange-brown with darker speckles, with pair of distinct lobes posteriorly, labium brown; chelicerae light brown with pair of tiny blackish frontal apophyses (fig. 523). Palps in general as in *P. binghamae* (cf. figs. 505–506), but femur distally without protruding ventral rim, and procursus and bulb significantly different (figs. 524–526). Legs orange-ochre with distinct brown rings on femora (proximally: faint, medially, subdistally, distally) and tibiae (proximally, medially, subdistally); legs without spines; with few vertical hairs on all segments; with many curved hairs on femora, tibiae, and metatarsi; retrolateral trichobothrium of tibia 1 at 9%. Opisthosoma length 3.2, height 3.2, slightly angular, ochre-gray, many black spots except ventrally, genital plate large, light brown posteriorly, yellowish anteriorly.

FEMALE (lectotype): Total length 6.7, carapace width 3.1; tibia 1: 7.4 (for further measurements see Keyserling's original description, in which obviously the same individual was measured). In general very similar to male; curved hairs at least dorsally on metatarsi (many hairs missing). Epigynum as in fig. 522.

VARIATION: The female paralectotypes are significantly smaller: carapace width in all ~ 2.0, tibia 1 (N = 2) 5.3, 5.4. The epigynum is also slightly different (fig. 521).

DISTRIBUTION: Known only from Bogotá area, Colombia.

MATERIAL EXAMINED: COLOMBIA: *Cundinamarca*: Bogotá: types above; Bogotá: Paramo de Monserrate, Sept. 20–Nov. 29, 1968 (H. Sturm), between dead leaves of *Espeleta grandiflora*, "Paramo Wald, Barber Fallen," 1♂ in AMNH.

Priscula venezuelana Simon, 1893

Figures 527–529

Priscula venezuelana Simon, 1893b: 477–478, fig. 466. – Huber, 1997b: 601, figs. 20–21.
Physocyclus venezuelanus: Brignoli, 1981: 96.
(*Priscula venezuelana*: González-Sponga, 1996: probably misidentified; see Note below).
Priscula ranchograndensis González-Sponga, 1996: 150–155, figs. 47–55. NEW SYNONYMY.

JUSTIFICATION OF SYNONYMY: I have not

been able to study any of the pholcids in González-Sponga's collection (none of numerous requests was answered), but for two reasons I believe that the proposed synonymy is very probably correct. First, I have directly compared Simon's lectotype with males collected at the type locality of *P. ranchograndensis* (Rancho Grande = Henri Pittier Nat. Park): the procursus (which is the interspecifically most variable structure) was practically identical, even with respect to size (1.49 versus 1.47 mm!). Second, González-Sponga's drawing of the procursus (1996: fig. 51) is small but considered sufficient for identification.

NOTE: González-Sponga (1996) gives a redescription of *P. venezuelana* Simon, based on specimens from Miranda. From his redescription per se it is not clear whether or not the specimens treated are "real" *P. venezuelana* or not, but if the synonymization above is correct, and if González-Sponga (1996) was right in separating his *P. ranchograndensis* from his *P. venezuelana*, then his *P. venezuelana* must be misidentified. None of the diagnostic characters given by González-Sponga (1996) convincingly separates the two species, and they are clearly very similar. Only a reexamination of the procursus of *P. venezuelana* sensu González-Sponga can solve this problem.

TYPES: Male lectotype, 3♀ paralectotypes, some juveniles from Caracas (Distrito Federal) and Tovar (Aragua), Venezuela; no further collection data, in MNHN (10923), examined.

DIAGNOSIS: Closely related to *P. annulipes*, distinguished by the procursus (straighter, dorsal protrusion more distal, shape of distal fork different; figs. 527–528), and by the bulbal apophysis (fig. 529).

MALE (Maracay; for redescription of the type material see Huber, 1997b): Total length 4.8, carapace width 2.6; leg 1: 62.5 (14.8+1.3+16.0+26.3+4.1), tibia 2: 12.0, tibia 3: 8.0, tibia 4: 11.2; tibia 1 l/d: 55. Habitus similar to *P. binghamae* (cf. fig. 501; see also fig. 20 in Huber, 1997b), but AME higher, ocular area more elevated, and distance PME-ALE larger (~ 90% of PME diameter). Carapace ochre, darker medially, radial stripes and lateral margins; ocular area and clypeus brown, sternum light brown; chelicerae almost identical to *P. annulipes* (cf. fig. 523; apophyses minimally larger; see also fig. 21c in Huber, 1997b). Palps in general as in *P. binghamae* (cf. figs. 505–506; see also figs. 21a–b in Huber, 1997b), but femur distally without protruding ventral rim, and procursus and bulb significantly different (figs. 527–529). Legs light brown, with dark rings on femora and tibiae (proximally, distally, and two to three in-between), and metatarsi (proximally and subproximally), rings on tibiae 1 indistinct; legs without spines, with curved hairs on tibiae and metatarsi, with few vertical hairs; retrolateral trichobothrium of tibia 1 at 6%. Opisthosoma higher than long (3.2 versus 2.7), gray, with many white spots, genital plate dark brown; brown area in front of spinnerets. Tibia 1 in other males: 12.1, 13.7.

FEMALE: Very similar to male. Epigynum anteriorly divided into two lobes (see fig. 21d in Huber, 1997b); tibia 1 (N = 3) 9.9, 10.6, 12.0.

DISTRIBUTION: Known from Distrito Federal and Aragua (Venezuela).

MATERIAL EXAMINED: VENEZUELA: *Distrito Federal* and *Aragua*: types above. *Aragua*: Maracay, Rancho Grande, 1200 m elev., cloud forest, Aug. 1–10, 1987 (Bordan & S. Peck), 2♂ in AMNH; Rancho Grande, Biol. Station, no date (C. T Collins), 1♀ in AMNH; Henri Pittier Nat. Park, Rancho Grande, 900 m elev., Feb. 18, 1984 (J. Coddington), 1♀ in USNM.

Priscula huila, new species

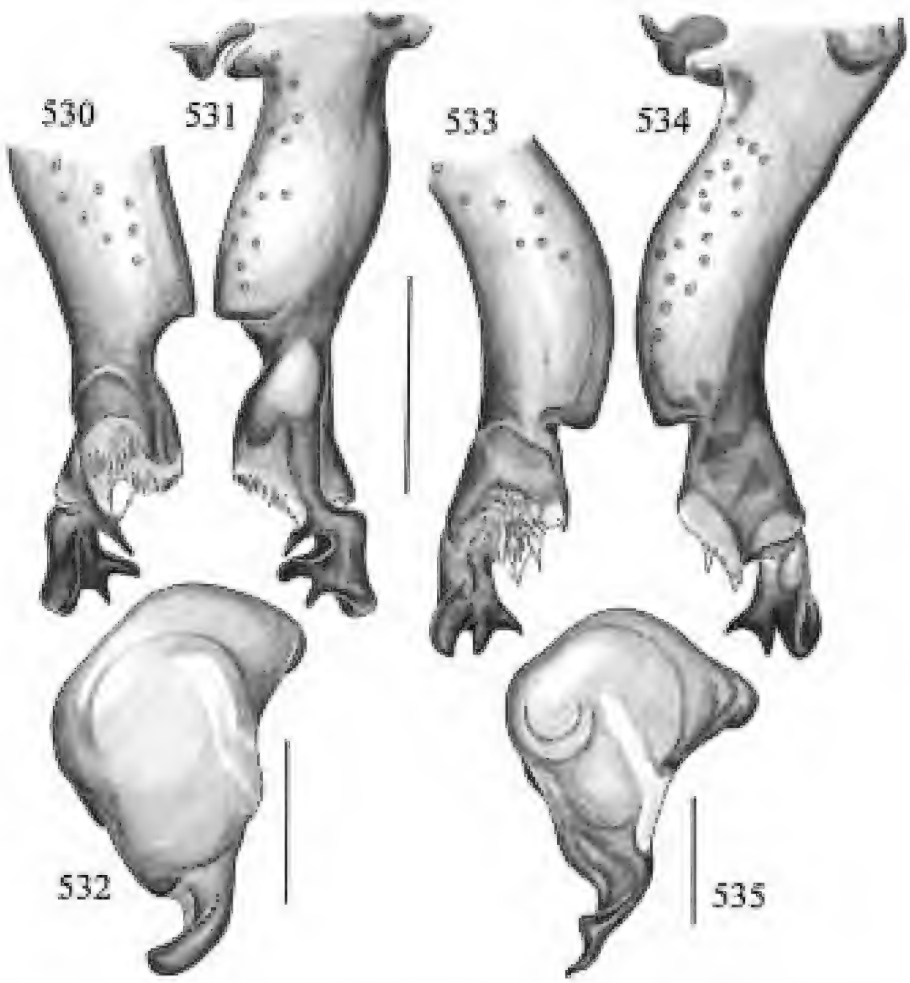
Figures 530–532

TYPE: Male holotype from 12 mi E Sta. Leticia, Dept. Huila, Colombia; 2300 m elev., Mar. 1976 (W. G. Eberhard), in MCZ.

ETYMOLOGY: Named for the Colombian state Huila. The name is a noun in apposition.

DIAGNOSIS: Closely related to *P. chejapi* González-Sponga; distinguished by the procursus (dorsal projection more proximal, distal element different; figs. 530, 531), and the shape of the bulbal apophysis (fig. 532).

MALE (holotype): Total length 4.7, carapace width 2.4; leg 1: 41.6 (10.3+1.1+10.3 +16.6+3.3), tibia 2: 7.6, tibia 3: 5.1, tibia 4:



Figs. 530–535. *Priscula* spp. 530–532. *P. huila*, n. sp., male holotype. **530**. Left procursus, prolateral view. **531**. Left procursus, retrolateral view. **532**. Left genital bulb, ~ dorsal view. 533–535. *P. chejapi* González-Sponga. **533**. Left procursus, prolateral view. **534**. Left procursus, retrolateral view. **535**. Left genital bulb, ~ dorsal view. Scale lines: 0.5 mm.

6.7; tibia 1 l/d: 43. Habitus similar to *P. binghamae* (cf. fig. 501); carapace light orange-ochre, with dark, roundish median spot and lateral smudges, with deep thoracic groove, ocular area dark brown, slightly higher than in *P. binghamae*, eight eyes in position similar to *P. pallisteri* (cf. fig. 513, but distance PME-ALE about 90% of PME diameter), clypeus dark brown, sternum light orange-brown with darker speckles, pair of indistinct lobes posteriorly, labium brown; chelicerae almost identical to *P. annulipes* (cf. fig. 523, apophyses slightly larger and more laterally). Palps in general as in *P. binghamae* (cf. figs. 505–506), but femur distally without protruding ventral rim, and procursus and bulb significantly different (figs. 530–532). Legs orange-ochre with distinct brown rings on femora (proximally, medially, subdistally, distally) and tibiae (proximally, medially, subdistally, distally); almost all hairs on legs missing; retrolateral trichobothrium of tibia 1 at 6%. Opisthosoma very high (length 2.9, height 3.2), ochre-gray, many black spots except ventrally, and some white spots, genital plate large, light brown.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: COLOMBIA: *Huila*: 12 mi E Sta. Leticia: type above.

Priscula chejapi González-Sponga, 1996

Figures 533–535

Priscula chejapi González-Sponga, 1996: 132–136, figs. 10–19.

TYPES: Male holotype, 1♀ paratype from Central Hidroeléctrica General José Antonio Páez, Cardenal Quintero, Mérida, Venezuela; 1800 m elev., July 10, 1992 (A. R. Delgado de González, M. García, M. A. González-Sponga), in collection González-Sponga (1362a, b), not examined.

DIAGNOSIS: Closely related to *P. huila*, distinguished by the procursus (more curved, more slender, and longer; dorsal projection more distal; distal element different; figs. 533–534) and by the bulbal apophysis that is much longer (fig. 535).

MALE (Mérida): Total length 6.7, carapace width 3.3; leg 1: (17.1+1.6+18.0, metatarsus and tarsus missing), tibia 2: 14.7, tibia 3: 11.3, tibia 4: 14.5; tibia 1 l/d: 54. Habitus similar to *P. binghamae* (cf. fig. 501); carapace light brown, dark brown medially and laterally, ocular area dark brown, slightly higher than in *P. binghamae*, eight eyes in position similar to *P. pallisteri* (cf. fig. 513, but distance PME-ALE about 70% of PME diameter), clypeus dark brown, sternum light brown, posteriorly only slightly curved; chelicerae apparently identical to *P. annulipes* (cf. fig. 523). Palps in general as in *P. binghamae* (cf. figs. 505–506), but femur distally without protruding ventral rim, and procursus and bulb significantly different (figs. 533–535). Legs light brown, with very faint darker rings on tibiae (subdistally); legs without spines, with curved hairs on femora and tibiae (slightly curved) and metatarsi (strongly curved); retrolateral trichobothrium of tibia 1 at 5%. Opisthosoma as high as long (4.0), dark gray, with lines of white spots, brown genital plate large; brown area in front of spinnerets.

VARIATION: The male holotype and paratypes have annulated legs (four rings on femora, three on tibiae, two on metatarsi; González-Sponga, 1996). Tibia 1 in male holotype: 17.1.

FEMALE: Not examined. See González-Sponga (1996) for description.

DISTRIBUTION: Known only from the Venezuelan state Mérida.

MATERIAL EXAMINED: VENEZUELA: *Mérida*: Mérida: "Telef. Est. La Montaña," 2450 m elev., cloud forest, June 27–July 26, 1989 (S. & J. Peck), 1♂ in AMNH.

Priscula andinensis González-Sponga, 1996

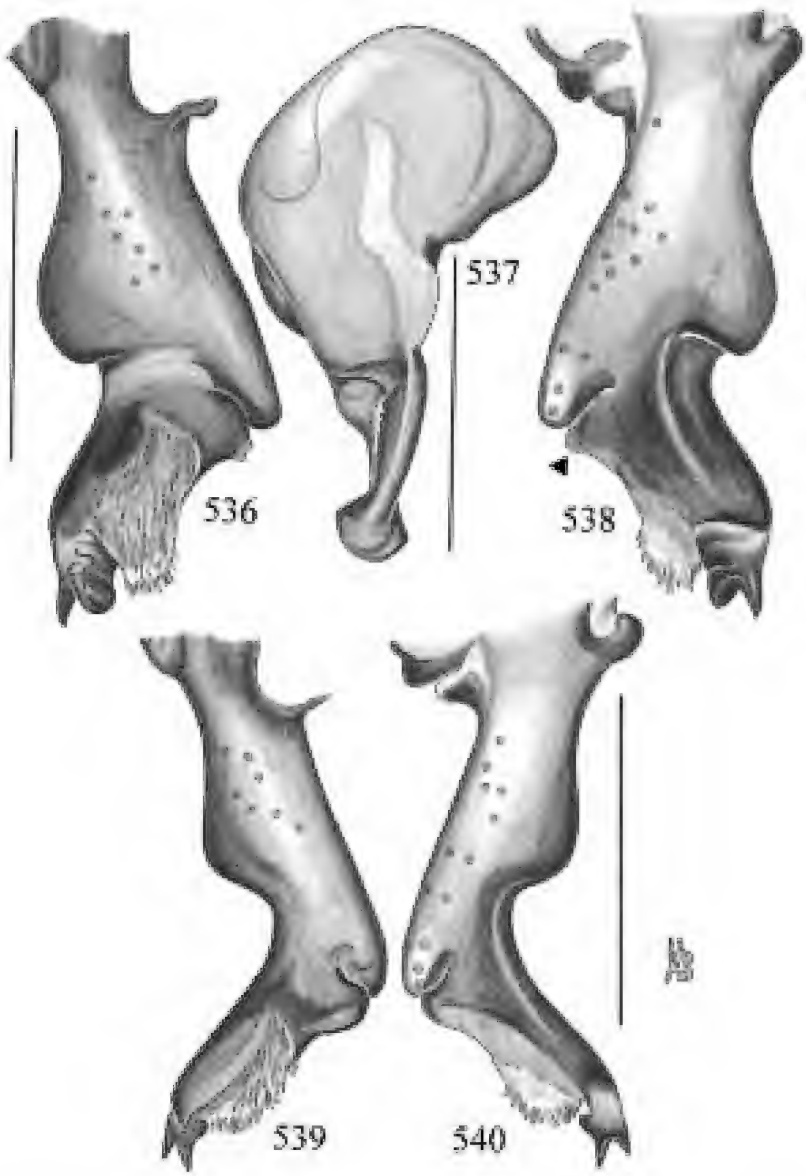
Figures 536–538

Priscula andinensis González-Sponga, 1996: 128–132, figs. 1–9.

TYPES: Male holotype, 3♂ 5 ♀ paratypes, and several juveniles from La Cuchilla (8°40′N, 71°20′W), carretera Mérida-La Azulita, between Campo Elías and Andrés Bello, Mérida, Venezuela; 2200 m elev., Dec. 12, 1981 and June 18, 1987 (A. R. Delgado de González, J. A. González D., M. A. González-Sponga), in collection González-Sponga (955a, b), not examined.

DIAGNOSIS: Closely related to *P. piapoco*; distinguished by the much thicker procursus (figs. 536, 538); from other congeners also by the bulbal apophysis (fig. 537). *P. piedraensis* seems also closely related, but has a distinctive procursus (thicker basally, ventral hump less developed; see González-Sponga, 1996: fig. 42).

MALE (Tabay Mucuy): Total length ~ 6.5 (opisthosoma deformed), carapace width 3.1; leg 1: 39.8 (10.1+1.5+9.9+14.7+3.6), tibia 2: 7.3, tibia 3: 5.1, tibia 4: 6.7; tibia 1 l/d: 25. Habitus similar to *P. binghamae* (cf. fig. 501), but ocular area slightly more elevated and AME slightly higher, distance PME-ALE much higher (~ 120% of PME diameter). Carapace light ochre-brown, with dark brown median and lateral stripes, ocular area and clypeus brown, sternum light brown, posterior border with pair of distinct lobes (cf. González-Sponga, 1996: fig. 2), labium darker; chelicerae brown, with pair of blackish frontal apophyses as in *P. annulipes* (cf. fig. 523; apophyses minimally more proximal and median). Palps in general as in *P. binghamae* (cf. figs. 505–506), but femur distally with hardly protruding ventral rim, and procursus and bulb significantly different



Figs. 536–540. *Priscula* spp. 536–538. *P. andinensis* González-Sponga. **536**. Left procursus, prolateral view. **537**. Left genital bulb, ~ dorsal view. **538**. Left procursus, retrolateral view (arrow: this protrusion was bigger in one male examined). 539–540. *P. piapoco*, n. sp. **539**. Left procursus, prolateral view. **540**. Left procursus, retrolateral view. Scale lines: 1.0 mm.

(figs. 536–538). Legs light brown, femora with light distal tips and dark subdistal rings, tibiae with dark rings (proximally, medially, subdistally) and light rings (following proximal dark ring, preceding and following subdistal dark ring); legs without spines, with few vertical hairs, with curved hairs on femora, tibiae, and metatarsi; retrolateral trichobothrium of tibia 1 at 7%. Opisthosoma about as high as long, slightly angular, ochre, with black and white spots dorsally, large brown genital plate.

VARIATION: Tibia 1 in other males examined: 9.6, 9.7, 9.9. Tibia 1 in male holotype:

9.2. The procursus of the male from 2700 m elev. (see below) differs slightly with respect to a dorsal protrusion (arrow in fig. 538) that is larger.

FEMALE: Not examined. See González-Sponga (1996) for description of female.

DISTRIBUTION: Known only from the Venezuelan state Mérida.

MATERIAL EXAMINED: VENEZUELA: *Mérida*: Tabay Mucuy, "Send. Lag. Suero," cloud forest, 2250 m elev., June 17–Aug. 2, 1989 (S. & J. Peck), 3♂ in AMNH; same locality at 2700 m elev., June 19–July 24, 1989 (S. & J. Peck), 1♂ in AMNH.

Priscula piapoco, new species
Figures 539–540

TYPES: Male holotype, 1♂ paratype from 20 km SE Azulita, "ULA Biol. Res. La Carbonera," Dept. Mérida, Venezuela; Podocarp forest, 2300 m elev., June 28–Aug. 3, 1989 (S. & J. Peck), in AMNH.

ETYMOLOGY: The specific name is a noun in apposition honoring the Piapoco Indians, a tropical forest people in Colombia and Venezuela, who have survived mainly by relocating repeatedly to avoid rubber collectors, settlers, cattle ranchers, and missionaries.

DIAGNOSIS: Closely related to *P. andinensis*, distinguished by the much thinner procursus (figs. 539–540); from other congeners also by the bulbal apophysis (cf. fig. 537).

MALE (holotype): Total length 6.4, carapace width 2.8; leg 1: 37.1 (9.3+1.3+9.3 +13.7+3.5), tibia 2: 6.8, tibia 3: 4.5, tibia 4: 6.3; tibia 1 l/d: 27. Habitus similar to *P. binghamae* (cf. fig. 501), but ocular area slightly more elevated, AME slightly higher; distance PME-ALE higher (~ 100% of PME diameter). Carapace ochre, with dark brown median stripe and lateral margins, ocular area, clypeus, and sternum brown; sternum posteriorly with pair of distinct lobes, as in *P. andinensis*. Chelicerae dark brown, with pair of blackish frontal apophyses as in *P. annulipes* (cf. fig. 523; apophyses minimally more proximal). Palps in general as in *P. binghamae* (cf. figs. 505–506), but femur distally with hardly protruding ventral rim, and procursus significantly different (figs. 539–540); bulb as in *P. andinensis* (cf. fig. 537). Legs light brown, femora with light distal tips and dark subdistal rings, tibiae with dark rings proximally and subdistally; legs without spines, with few vertical hairs, with curved hairs on femora, tibiae, and metatarsi; retrolateral trichobothrium of tibia 1 at 7%. Opisthosoma higher than long (4.3 versus 4.0), slightly angular; dorsally gray with blackish spots; large brown genital plate, brown area in front of spinnerets.

VARIATION: Tibia 1 in other male: 9.3; one male had also white spots on the opisthosoma.

FEMALE: Unknown.

DISTRIBUTION: Known only from two localities in the Venezuelan state Mérida.

MATERIAL EXAMINED: VENEZUELA: *Mérida*: 20 km SE Azulita: types above; Mérida, "Telef. Est. La Montaña," 2450 m elev., cloud forest, June 27–July 26, 1989 (S. & J. Peck), 1♂ in AMNH.

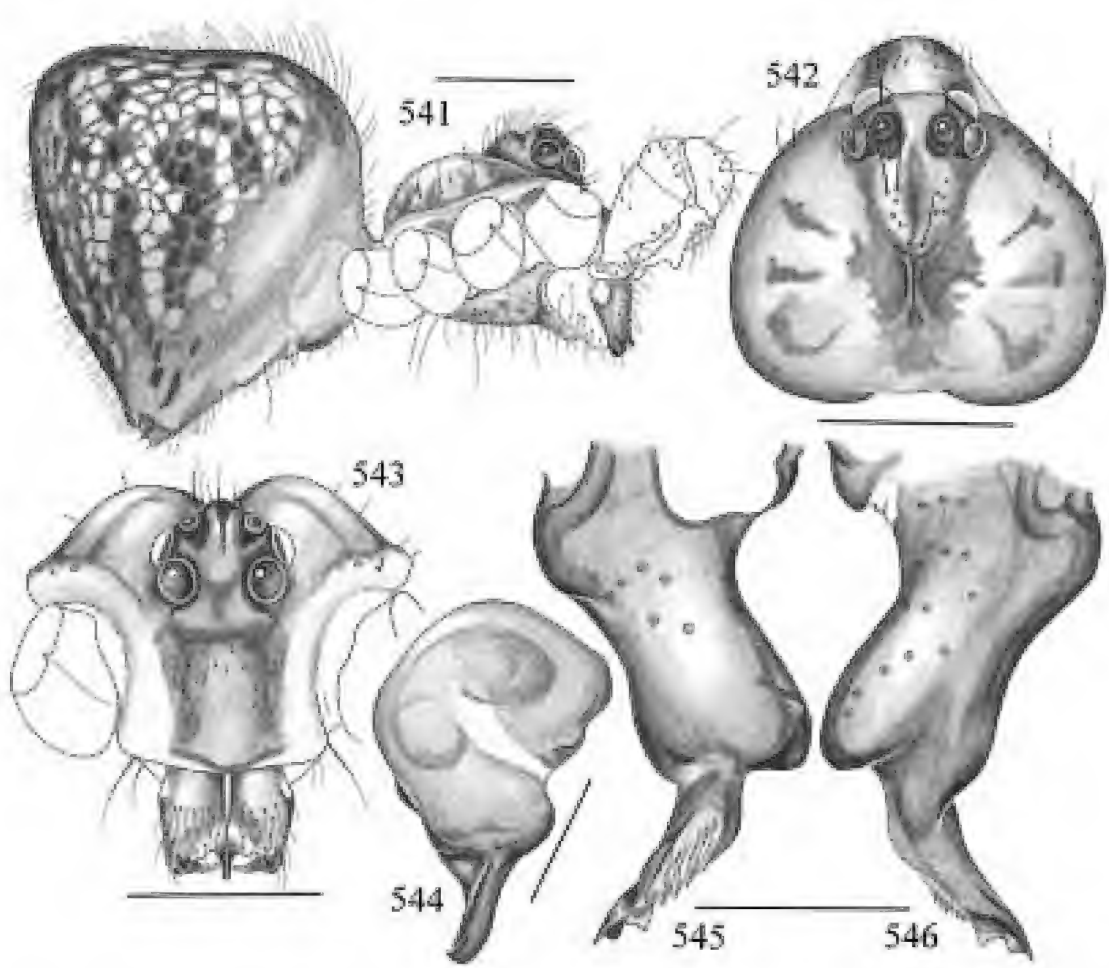
Priscula ulai González-Sponga, 1996
Figures 96, 166, 541–546

Priscula ulai González-Sponga, 1996: 160–164, figs. 66–75.

TYPES: Male holotype, 1♀ paratype from Monte Zerpa (8°36′N, 71°06′W), near Mérida, Mérida, Venezuela; 1650 m elev., Jan. 7, 1988 (A. R. Delgado de González & M. A. González-Sponga), in collection González-Sponga (1110a, b), not examined.

DIAGNOSIS: Distinguished from most known congeners by the absence of AME (fig. 543); from *P. limonensis* and *salmeronica* also by the shape of the procursus (particularly the distal segment, which is bent toward the femur: figs. 545–546), and the bulb (fig. 544).

MALE (Tabay Mucuy): Total length 3.7, carapace width 1.9; leg 1: 41.7 (10.5+0.9 +10.3+17.5+2.5), tibia 2: 7.3, tibia 3: 5.1, tibia 4: 6.4; tibia 1 l/d: 55. Habitus as in fig. 541; carapace orange to light brown, dark brown medially and laterally (fig. 542), ocular area dark brown, considerably elevated, with saddle posteriorly (fig. 541), AME absent, distance PME-ALE about 100% of PME diameter. Clypeus dark brown, sternum ochre-brown, darker anteriorly, posterior border almost straight; chelicerae brown, with pair of blackish frontal apophyses (fig. 543). Palps in general as in *P. binghamae* (cf. figs. 505–



Figs. 541–546. *Priscula ulai* González-Sponga, male. **541**. Habitus, lateral view. **542–543**. Prosoma, dorsal and frontal views. **544**. Left genital bulb, ~ dorsal view. **545**. Left procursus, prolateral view. **546**. Left procursus, retrolateral view. Scale lines: 1.0 mm (541–543), 0.3 mm (544–546).

506), but ventral rim on femur distally not protruding, and procursus and bulb significantly different (figs. 544–546). Tarsal organ exposed, on high stalk (fig. 96). Legs ochre to light brown, with dark rings on femora and tibiae (subproximally, medially: faint, subdistally, distally), without spines, few vertical hairs, slightly curved hairs on femora, tibiae, and metatarsi; retrolateral trichobothrium of tibia 1 at 9%. Opisthosoma dorsally densely covered with black and white spots (fig. 541), ventrally gray, genital plate brown, large; gonopore without epiandrous spigots; ALS with several piriform gland spigots (fig. 166).

VARIATION: Tibia 1 in 9 males: 9.3–10.6 ($\bar{x}$ = 9.9).

FEMALE: Not examined. See González-Sponga (1996) for description of female.

DISTRIBUTION: Known only from the Venezuelan state Mérida.

MATERIAL EXAMINED: VENEZUELA: *Mérida*: Tabay Mucuy: "Send. Lag. Suero," cloud forest, 2250 m elev., June 17–Aug. 2, 1989 (S. & J. Peck), 7♂ in AMNH; Tabay Mucuy: "Send. Truchicola," cloud forest, 2300 m elev., June 17–Aug. 3, 1989 (S. & J. Peck), 5♂ in AMNH.

Priscula paeza, new species

Figures 547–551

TYPES: Male holotype, 1♀ paratype from "Central Hidroelectrica Anchicayá (Old),"

Dept. del Valle, Colombia; 400 m elev., Oct. 1975 (W. G. Eberhard), in MCZ.

ETYMOLOGY: The species name is an adjective honoring the Páez Indians who now live mostly as farmers on the eastern slopes of the Cordillera Central in Colombia.

DIAGNOSIS: Easily distinguished from known congeners by the shape of the procursus (extremely broad basis, complicated distal segment: figs. 547–548), and by the shape of the bulbal apophysis (fig. 549).

MALE (holotype): Total length ~ 4.1 (opisthosoma damaged), carapace width 2.0; leg 1 missing, tibia 2: 8.8, leg 3 missing, tibia 4: 8.2. Habitus similar to *P. binghamae* (cf. fig. 501), but ocular area slightly more elevated, and AME higher, distance PME-ALE about 60% of PME diameter. Carapace ochre, with large roundish spot medially and darker lateral margins; ocular area, clypeus and sternum brown; sternum posteriorly with single, widely curved lobe. Chelicerae as in *P. annulipes* (cf. fig. 523), but apophyses slightly longer. Palps in general as in *P. binghamae* (cf. figs. 505–506), but femur without distal protruding rim, and procursus and bulb significantly different (figs. 547–549). Legs light brown, with darker rings at patella area and on tibia subdistally; apparently without spines, without curved and vertical hairs (most hairs on legs missing). Opisthosoma gray, with blackish and white spots.

FEMALE (paratype): Tibia 1: 8.9. In general very similar to male, but opisthosoma higher, triangular in lateral view. Epigynum as in fig. 551, light brown medially, dark brown laterally; dorsal view as in fig. 550.

VARIATION: Tibia 1 in 3 other females: 7.9, 8.0, 9.6. Two of the females included tentatively (Habana, Yotoco) have curved hairs on tibiae and metatarsi, and very strong legs. They are assigned to this species (rather than to *P. annulipes* whose epigynum is apparently indistinguishable) because of their geographic origin (Dept. del Valle), the few dark rings on the legs, the triangular opisthosoma, and the dark sternum.

DISTRIBUTION: Known from various localities in Dept. del Valle, Colombia.

MATERIAL EXAMINED: COLOMBIA: *Dept. del Valle*: Anchicayá: types above; Anchicayá, 400 m elev., Oct. 26, 1969 (W. G. Eberhard), 1♀ in MCZ; Habana, 2200 m elev., Sept. 16, 1969 (W. G. Eberhard), 1♀ in MCZ; Yotoco, 1500 m elev., Aug. 1977 (W. G. Eberhard), 1♀ in MCZ.

Priscula tunebo, new species

Figures 552–555

TYPE: Male holotype from Pregonero, Dept. Tachira, Venezuela; Camp. Siberia, Laldea, 1200 m elev., rain forest, July 10–31, 1989 (S. & J. Peck), in AMNH.

ETYMOLOGY: The specific name is a noun in apposition honoring the Tunebo, a seminomadic people in the northern Cordillera Oriental in Colombia, who avoided extinction during the conquest period by constantly moving to elude the Spaniards.

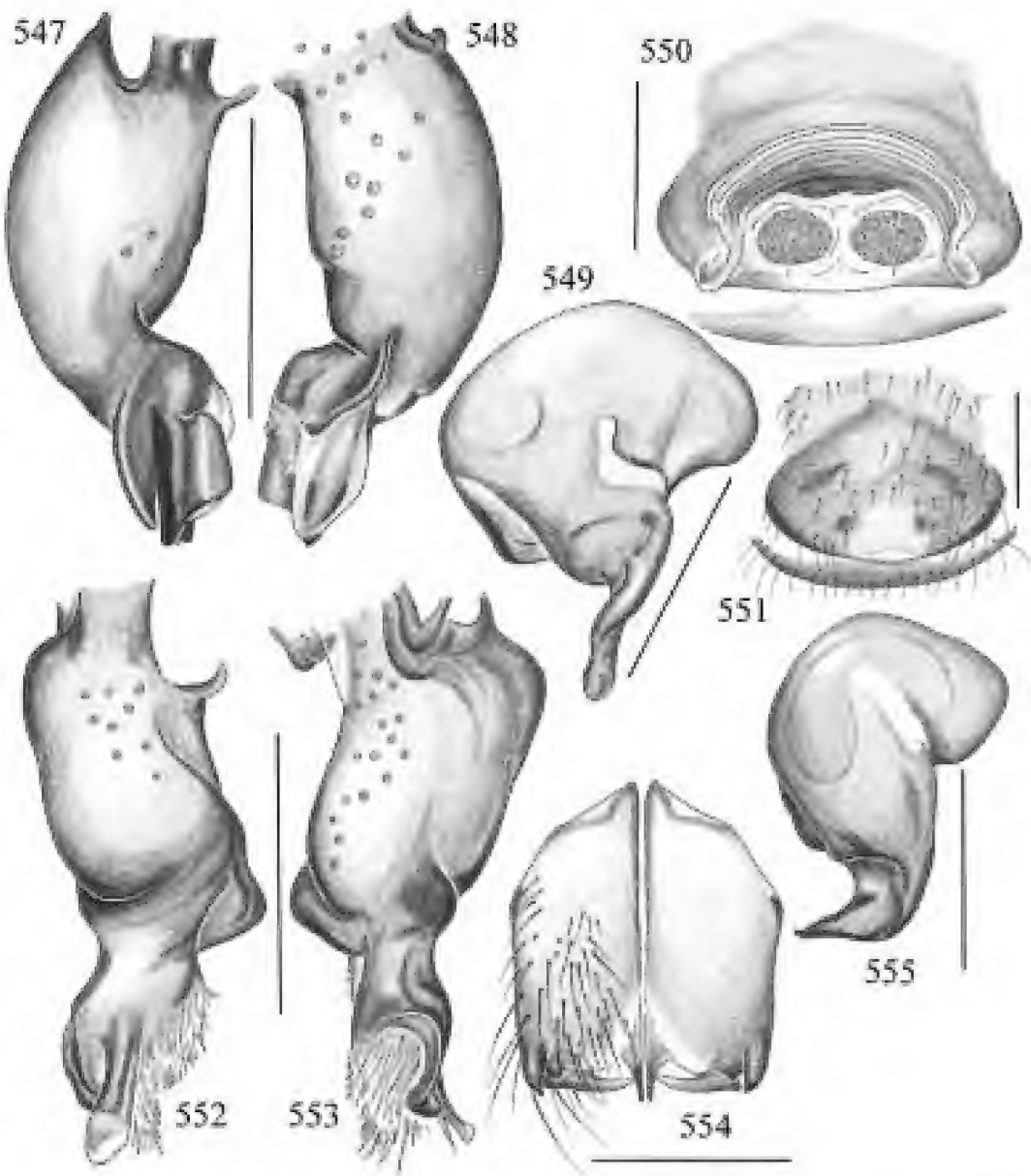
DIAGNOSIS: Distinguished from congeners by the shape of the procursus (figs. 552–553), the bulb (fig. 555), and the lateral position of the cheliceral apophyses (fig. 554; cf. *P. binghamae*). Possibly close to *P. lagunosa*, which lacks apophyses on the male chelicerae.

MALE (holotype): Total length 3.3, carapace width 1.8; leg 1: 38.4 (9.7+0.8+9.6 +16.0+2.3), tibia 2: 6.8, tibia 3: 4.7, tibia 4: 6.3; tibia 1 l/d: 55. Habitus similar to *P. binghamae* (cf. fig. 501), but ocular area slightly more elevated and AME slightly higher; distance PME-ALE about 60% of PME diameter. Carapace orange to light brown, speckled with brown, ocular area and clypeus brown, sternum ochre-brown, posteriorly with pair of indistinct lobes; chelicerae brown, with pair of blackish frontal apophyses in very lateral position (fig. 554). Palps in general as in *P. binghamae* (cf. figs. 505–506), femur distally with ventral rim protruding into distinct apophysis, procursus and bulb as in figs. 552–553, 555. Legs yellowish, with very faint darker rings on femora (distally) and tibiae (proximally, subdistally); most hairs missing; retrolateral trichobothrium of tibia 1 at 6%. Opisthosoma higher than long (2.3 versus 1.9), slightly angular; gray, covered with blackish spots dorsally; genital plate light brown, large.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: VENEZUELA: *Tachira*: Pregonero: type above.



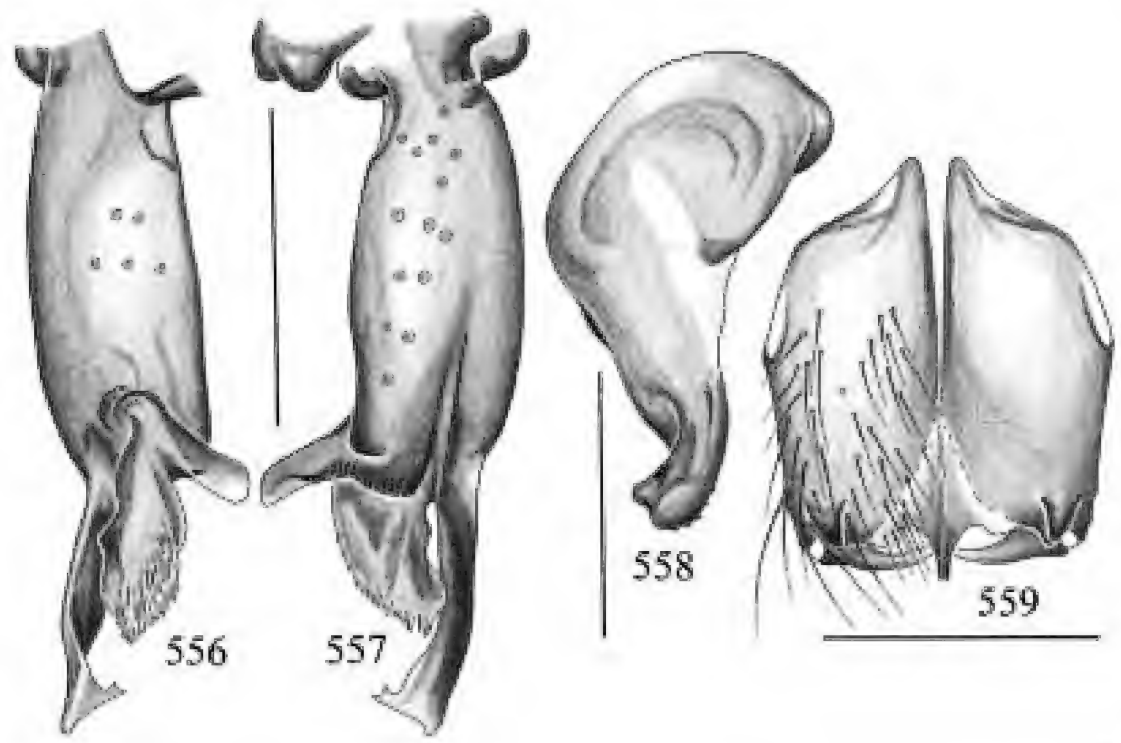
Figs. 547–555. *Priscula* spp. 547–551. *P. paeza*, n. sp. **547**. Left procursus, prolateral view. **548**. Left procursus, retrolateral view. **549**. Left genital bulb, ~ dorsal view. **550**. Epigynum, dorsal view. **551**. Epigynum, ventral view. 552–555. *P. tunebo*, n. sp., male holotype. **552**. Left procursus, prolateral view. **553**. Left procursus, retrolateral view. **554**. Chelicerae, frontal view. **555**. Left genital bulb, ~ dorsal view. Scale lines: 0.5 mm.

Priscula taruma, new species

Figures 556–559

TYPE: Male holotype from "Canje Ikuruwa River (Forest Savanna)" (57°50′W, 5°70′N), East Berbice-Corentyne, Guyana; Aug.–Dec. 1961 (G. Brentley), in AMNH.

ETYMOLOGY: The specific name is a noun in apposition honoring the Taruma (see *Metagonia taruma* above).



Figs. 556–559. *Priscula taruma*, n. sp., male holotype. **556**. Left procursus, prolateral (slightly ventral) view. **557**. Left procursus, retrolateral view. **558**. Left genital bulb, ~ dorsal view. **559**. Chelicerae, frontal view. Scale lines: 0.5 mm.

DIAGNOSIS: Easily distinguished from congeners by the shape of the procursus, with its dorsal projection and simple distal flap (figs. 556–557).

MALE (holotype): Total length 3.8, carapace width 1.6; leg 1: 38.6 (9.6+0.5+9.5 +16.7+2.3), tibia 2: 6.4, tibia 3: 4.3, tibia 4: 6.1; tibia 1 l/d: 63. Habitus similar to *P. ulai*, including saddle behind eyes (cf. fig. 541), but tiny AME present (diameter ~ 0.025); distance PME-ALE about 80% of PME diameter; carapace light brown, speckled, with light areas at side of ocular area; ocular area, clypeus and sternum brown; sternum with pair of widely separated lobes posteriorly. Chelicerae light brown, with pair of frontal apophyses (fig. 559). Palps in general as in *P. binghamae* (cf. figs. 505–506), but femur without protruding ventral rim distally, and procursus and bulb significantly different (figs. 556–558). Legs light orange-brown, with dark rings on femora (subdistally, preceded by light ring), and tibiae (proximally, followed by light ring, and subdistally, preceded by light ring), and metatarsi (proximally); legs without spines and curved hairs, with few vertical hairs; retrolateral trichobothrium of tibia 1 at 7%. Opisthosoma ochre-gray, with many dark spots, genital plate brown, wide; large brown area in front of spinnerets.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: GUYANA: *East Berbice-Corentyne:* type above.

TAINONIA, NEW GENUS

TYPE SPECIES: *Blechroscelis serripes* Simon, 1893

ETYMOLOGY: The generic name honors the Taíno of the West Indies, who numbered perhaps millions at the time of the Spanish conquest but were almost completely destroyed by 1550. Today a few hundred people with

Taíno background survive in Cuba and Puerto Rico. Gender feminine.

DIAGNOSIS: Large, eight-eyed pholcids (total length 5–8 mm), with elongate opisthosoma (fig. 560), spines in several rows on the legs of both sexes (fig. 567), simple but massive procursus, barely modified male chelicerae, flat, trapezoidal epigynum.

DESCRIPTION: See redescription of type species below. The other, as yet undescribed, species seem to differ only in details of the genitalia (procursus, bulb, epigynum).

MONOPHYLY: The type species shares with the undescribed species the spines in several rows on the legs, and the overall unique shape of the procursus (a massive, slightly curved rod: figs. 562–563).

GENERIC RELATIONSHIPS: The eye pattern (large distance between PME and ALE) is similar to typical genera of the New World clade. The bulb, with its slightly spiraling sclerotized apophysis, is similar to *Priscula*, but *Tainonia* has a very distinct pseudosegmentation and is therefore probably not a holocnemine. Whether or not the ventrodistal structure on the male palpal femur (fig. 564) is a homolog of the "pup" apophysis of the *Modisimus* group is unknown. In sum, *Tainonia* might be a primitive element of the New World clade, but the phylogenetic position is obscure.

COMPOSITION: Only the type species is described. See Note below for further, as yet undescribed, species.

DISTRIBUTION: Known only from Hispaniola (Haiti and Dominican Republic).

Tainonia serripes (Simon, 1893), new combination

Figures 560–569

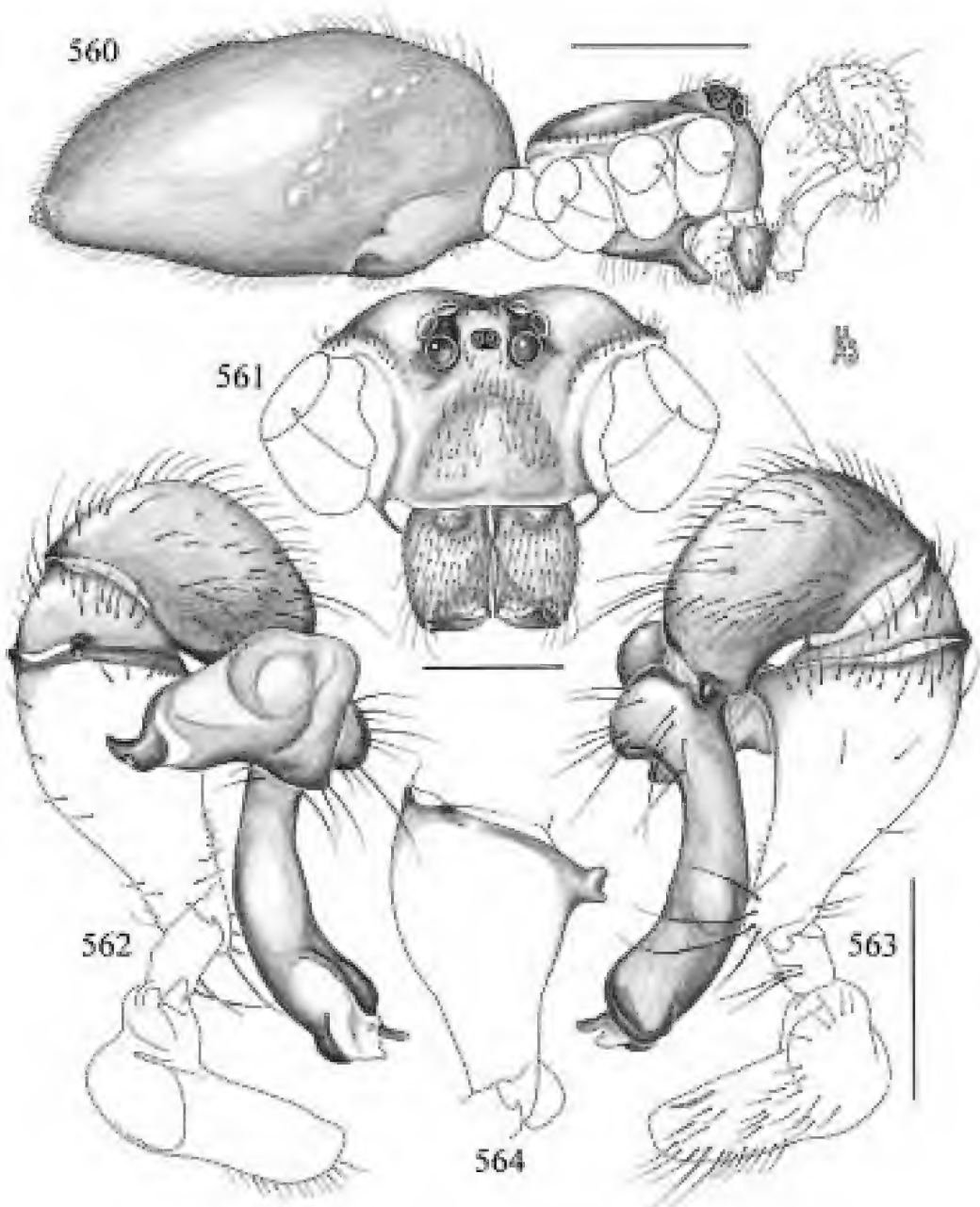
Blechroscelis serripes Simon, 1893b: 479–481, 483. – Bryant 1948: 366–367, fig. 46. – Huber, 1997b: 578, figs. 2A–D.

TYPE: Female holotype from Santo Domingo, Dominican Republic; date and collector not given, in MNHN (6832), examined (Huber, 1997b).

DIAGNOSIS: Large pholcid, distinguished from as yet undescribed congeners (see Note below) by minor details in the shape of procursus and epigynum (figs. 562–563, 568).

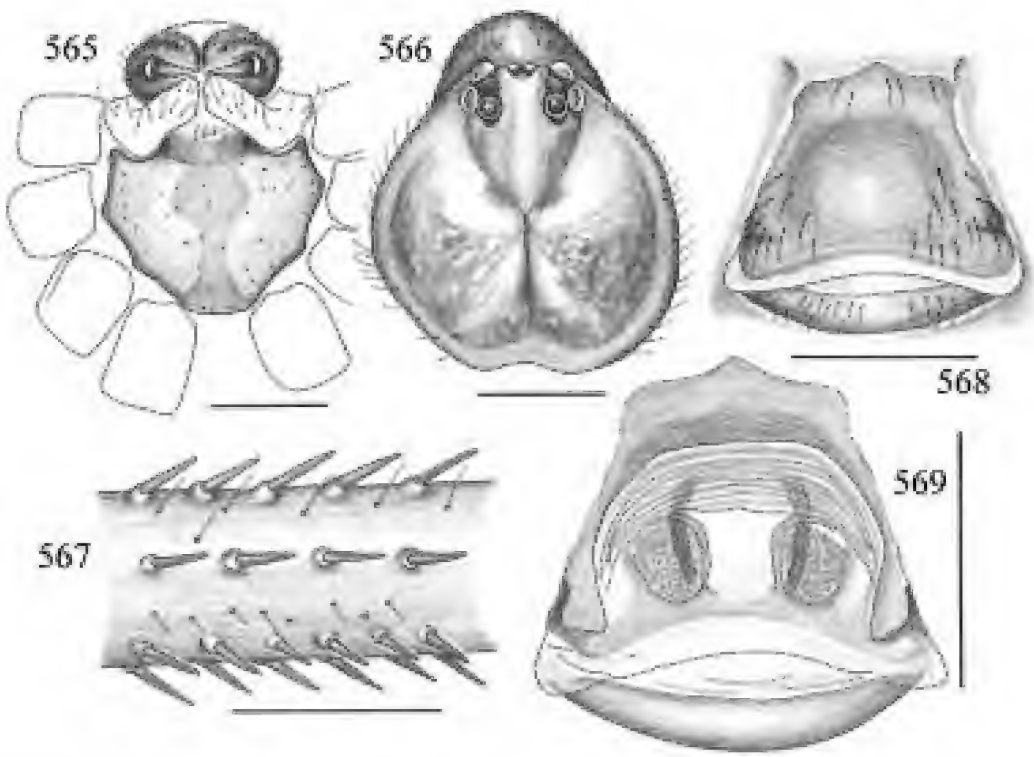
NOTE: The main point in the present paper is that *Tainonia serripes* Simon is not closely related to the South American pholcids Simon and other workers called *Blechroscelis* (now *Mesabolivar*), but is apparently an isolated element of the New World fauna, deserving the rank of a genus. There is more than one species on Hispaniola, and I am not sure that the material described herein is in fact conspecific with the female holotype, but convincing statements on species level can only be made after further collecting (e.g., of males at the type locality). Actually, there are at least three, possibly five or more species: (1) the present material; (2) *serripes*, which is here tentatively considered conspecific with the present material, but in which the epigynum seems to be shorter and wider; (3) the material studied by Bryant (1948) (females only), in which the epigynum has a pair of blackish structures embedded in membrane at the lateral margins of the genital opening; (4) a certainly different species, not treated in the present paper, from the Dominican Republic, Prov. Samana, Manuel Chiquito, 1♂ 1♀ deposited in Instituto de Ecología y Sistematica del Ministerio de Ciencia, Tecnología y Medio Ambiente, Cuba; (5) another certainly different species, not treated herein, from the Dominican Republic, Prov. La Vega, La Cienaga, 1♂ in USNM, and 1♂ in AMNH.

MALE (Kenskoff, Haiti): Total length 7.8, carapace width 2.5; leg 1: (19.6+1.1+18.0 +28.3, tarsus missing), tibia 2: 12.5, tibia 3: 10.0, tibia 4: 11.9; tibia 1 l/d: 75. Habitus as in fig. 560; carapace ochre with light brown pattern, with deep thoracic groove, without pit; ocular area light to dark brown, moderately elevated with eight eyes (fig. 561), distance PME-ALE about 100% of PME diameter. Sternum ochre-yellow with brown margin, slightly darker medially, labium brown; chelicerae reddish-brown, densely covered with short hair, with pair of humps proximally, otherwise unmodified (fig. 561). Palps as in figs. 562–563, ochre-yellow to brown, procursus distally black; coxa retrolaterally with indistinct hump, femur proximally with retrolateral apophysis, and distally with distinctive ventral apophysis (fig. 564); procursus massive, but very simple (figs. 562–563), bulb with hook-shaped apophysis (fig. 562). Legs light brown, fem-



Figs. 560–564. *Tainonia serripes* (Simon), male. **560**. Habitus, lateral view. **561**. Prosoma, frontal view. **562**. Left palp, prolateral view. **563**. Left palp, retrolateral view. **564**. Left palpal femur, prolateral view. Scale lines: 2.0 mm (560), 1.0 mm (561–564).

ora and tibiae with light tips preceded by slightly darker rings; femora and tibiae with five rows of spines and several vertical hairs (fig. 567), metatarsi only dorsoproximally with some spines; legs without curved hairs; retrolateral trichobothrium of tibia 1 at 6%; tarsus 1 (male from Savanette, Haiti) with over 30 pseudosegments (very distinct distally). Opisthosoma gray with some lines of whitish spots, ochre mark dorsally; genital



Figs. 565–569. *Tainonia serripes* (Simon). **565–566**. Male prosoma, ventral and dorsal views. **567**. Male femur 2 at distal half, retrolateral view. **568**. Epigynum, ventral view. **569**. Epigynum, dorsal view. Scale lines: 1.0 mm (565–566, 568–569), 0.4 mm (567).

plate brown, purple line from genital plate about ⅔ to spinnerets, tapering behind.

FEMALE (for holotype redescription see Huber, 1997b): In general very similar to male, but without humps on chelicerae; tibia 1 (N = 5) 13.1–15.5. Epigynum as in fig. 568, dorsal view as in fig. 569. The female from Kenskoff carried a relatively huge egg sac (diameter 5.6).

VARIATION: The second male examined (Haiti: Savanette) was much smaller (carapace width 1.4, tibia 2: 9.0), but otherwise identical, and accompanied by two larger females. The shape of the epigynum may vary in the degree of sclerotization/pigmentation: in recently molted or bleached females, it appears short because the anterior part is not yet pigmented (cf. fig. 2c of holotype in Huber, 1997b), while in older females, the epigynum is long, as shown by Bryant (1948) and in fig. 568.

DISTRIBUTION: Known from various localities on Hispaniola (see Note above).

MATERIAL EXAMINED: DOMINICAN REPUBLIC: Santo Domingo: type above; near La Romana: July 31, 1935 (W. G. Hassler), 1 penultimate male, in MCZ. The following three vials contain the material studied by Bryant (1948): Puerto Plata, Apr.–May 1941 (D. Hurst), 2♀ (2 vials) in MCZ; Villa Altagracia, July 1938 (Darlington), 1 penultimate male, in MCZ. HAITI: Kenskoff, Sept. 6, 1935 (collector not given), 1♂ 1♀ in AMNH; Savanette, "Valley of The Eex-2-Cheval," Apr. 23, 1958 (S. Lazell), 1♂ 2♀ 2 juveniles in AMNH.

PHYSOCYCLUS SIMON, 1893

Physocyclus Simon, 1893b: 470 (type species by original designation *Pholcus globosus* Taczanowski, 1874; examined). – Gertsch, 1971: 61–62. – Brignoli, 1981: 92–97. – Huber, 1997b: 598; 1998d: 46–47.

I have not extensively studied representatives of this genus, but several points worth

noting have emerged during the course of this study.

First, most (or all?) *Physocyclus* species share an easily visible apomorphy on the male procursus: a dorsal apophysis and a ventral pocket ("a" and "p" in fig. 577). These characters have been illustrated in some species (most clearly in *P. bicornis* by Gertsch, 1971, fig. 67), but often went unnoticed because structures and background are usually entirely black. I have checked some species in which the published illustrations suggested the absence of one or both characters (*P. cornutus* Banks, *californicus* Chamberlin and Gertsch, *enaulus* Crosby, *merus* Gertsch, *modestus* Gertsch, *pedregosus* Gertsch, *reddelli* Gertsch, *tanneri* Chamberlin, *validus* Gertsch), but found them in all cases. The two characters form a functional unit, as the apophysis of one procursus is inserted into the pocket of the other procursus during copulation (studied in *Physocyclus globosus* by Huber and Eberhard, 1997). This character is apparently shared by *Artema*, but only behavioral observations could provide convincing evidence as to the homology of the structures (asymmetrical insertion of the procursi during copulation would strongly support the existence of an identical mechanism). Another character shared by *Physocyclus* and *Artema* is the brush on the procursus (e.g., figs. 48–49). The cones on the chelicerae, however, that seem so similar under the dissecting scope, are of a completely different nature: they are hairs in *Artema* (figs. 12–13), but sclerotized projections in *Physocyclus* (e.g., fig. 36). The relationship between the two genera remains unclear.

Second, as previously suggested (Huber, 1997b), *Priscula* is a well-defined genus, and is therefore removed from its synonymy with *Physocyclus* (synonymized by Brignoli, 1981). *Hypsorinus* (also synonymized with *Physocyclus* by Brignoli, 1981) is a synonym of *Priscula*. The cladistic analysis suggests that *Priscula* is indeed close to *Physocyclus*. However, considering the unclear position of *Artema*, the several differences between *Physocyclus* and *Priscula*, and their strict geographic separation, it seems preferable and more informative to keep the two genera apart.

Third, with the exception of the type species, *Physocyclus* seems to have a much narrower distribution than previously thought. At this point, only 3 of the previously 11 South American *Physocyclus* have not yet been transferred or synonymized: (1) *P. dubius* Mello-Leitão, 1922 (from Brazil), whose type material is apparently lost, but the original description strongly suggests that this is a synonym of *P. globosus*. Brignoli (1981) already suspected this synonymy, but did not formally synonymize the two names. The female has the typical "petite élévation conique juste en arrière de la strie thoracique," and Mello-Leitão's description and illustration of the epigynum (1922: fig. 2) perfectly fits *P. globosus*. Therefore, the two names are herein synonymized (NEW SYNONYMY). (2) *P. viridis* Mello-Leitão, 1940 (Brazil), in which the male has one pair of frontal apophyses on the chelicerae (Mello-Leitão, 1940c), in contrast to the several cones in "real" *Physocyclus*. The type material is apparently lost, but the species is almost certainly misplaced. (3) *P. tigrinus* (Taczanowski, 1874) (French Guiana), which Simon (1893b) thought was "*probablement*" a *Priscula*, and which then accidentally became a *Physocyclus* when Brignoli (1981) synonymized the two genera. I suspect it to be a synonym of *Smeringopus pallidus* (see Composition under *Priscula* description, p. 129). In conclusion, *Physocyclus* is probably not an original element of the South American fauna.

Most described *Physocyclus* species occur in western USA and Mexico (W. Gertsch—in an unpublished manuscript—prepared descriptions of 22 new species from this region). The southernmost reliable records (except *P. globosus*) are of *P. dugesi* Simon and *P. guanacaste* Huber from Costa Rica, but even these species might be introduced there by humans. With the exception of *P. globosus*, *Physocyclus* seems to be absent from the Antilles. I strongly susupect that the recently described Chinese species *P. orientalis* Zhu and Song, 1999 (in Song et al., 1999) is a synonym of *P. globosus*.

For several reasons I have chosen *P. mysticus* rather than the type species for redescription as an exemplary species herein: (1) The type species *P. globosus* has been illus-

trated several times in sufficient quality (e.g., Brignoli, 1981; Huber and Eberhard, 1997), and is one of the exemplar taxa in the cladistic analysis anyway; (2) Brignoli (1981) assumed that *P. mysticus* was misplaced, and suggested a transfer to *Psilochorus*. However, the illustrations of procursus and chelicerae (figs. 577–578) clearly show the structures on the procursus that define the genus (together with *Artema*?), and the typical armature on the male chelicerae; (3) The species has never been redescribed, and the female has never been described.

Physocyclus mysticus Chamberlin, 1924

Figures 570–580

Physocyclus mysticus Chamberlin, 1924: 632–633, figs. 70–71. – Brignoli, 1981: 94 (transfer to *Psilochorus* suggested).

TYPE: Male holotype from Tortuga Island (27°26′N, 111°52′W), Gulf of California, Baja California Sur, Mexico; June 22, 1921 (E. P. van Duzée), in CAS (examined).

DIAGNOSIS: Distinguished from congeners by the long, slender palpal femur with ventral apophysis (fig. 574), by the shape of bulb and procursus (figs. 576–577), and by the long epigynum with three small humps anteriorly (fig. 579).

MALE (holotype): Total length ~ 5.5 (opisthosoma shrunken), carapace width 2.8, length 2.8; leg 1 missing, tibia 2: 11.2, tibia 3: 8.3, tibia 4: 10.9. Habitus and prosoma shape as in figs. 570–572; thoracic groove slightly widened frontally, but not forming a pit; distance PME-ALE about 70% of PME diameter. Carapace ochre with brown median mark, ocular area with dark median stripe, clypeus with broad brown median band, sternum ochre-yellow, speckled with brown; chelicerae ochre with black cones frontally and stridulatory files laterally (fig. 578; pick is a modified hair proximally on palpal femur), palps proximally ochre-yellow, distally brown to black; coxa without retrolateral apophysis, femur long and slender, with ventral apophysis, procursus relatively simple, with hood (pocket) and apophysis as typical for genus (fig. 577), bulb with slightly twisted apophysis and additional smaller protrusion provided with little pointed teeth (fig. 576). Legs light brown, with darker rings on femora (subdistally) and tibiae (subproximally and subdistally); without spines and vertical hairs, with curved hairs on tibiae (few, ventrally) and metatarsi (many); retrolateral trichobothrium of tibia 1 at 12%; pseudosegmentation of tarsi not visible. Opisthosoma ochre-gray with stripes of black spots, genital plate long, light brown.

VARIATION: Tibia 1/2 in other males: 11.5/9.1, 9.2/7.2, 10.3/?, 10.0/8.0; some specimens have many white spots on the opisthosoma.

FEMALE: Tibia 1 (N = 6) 7.1–10.0 ($\bar{x}$ = 8.3). In general very similar to male. Epigynum very long, anterior part with three small humps, light brown, posterior part flat, with darker brown marks (fig. 579). Dorsal view as in fig. 580.

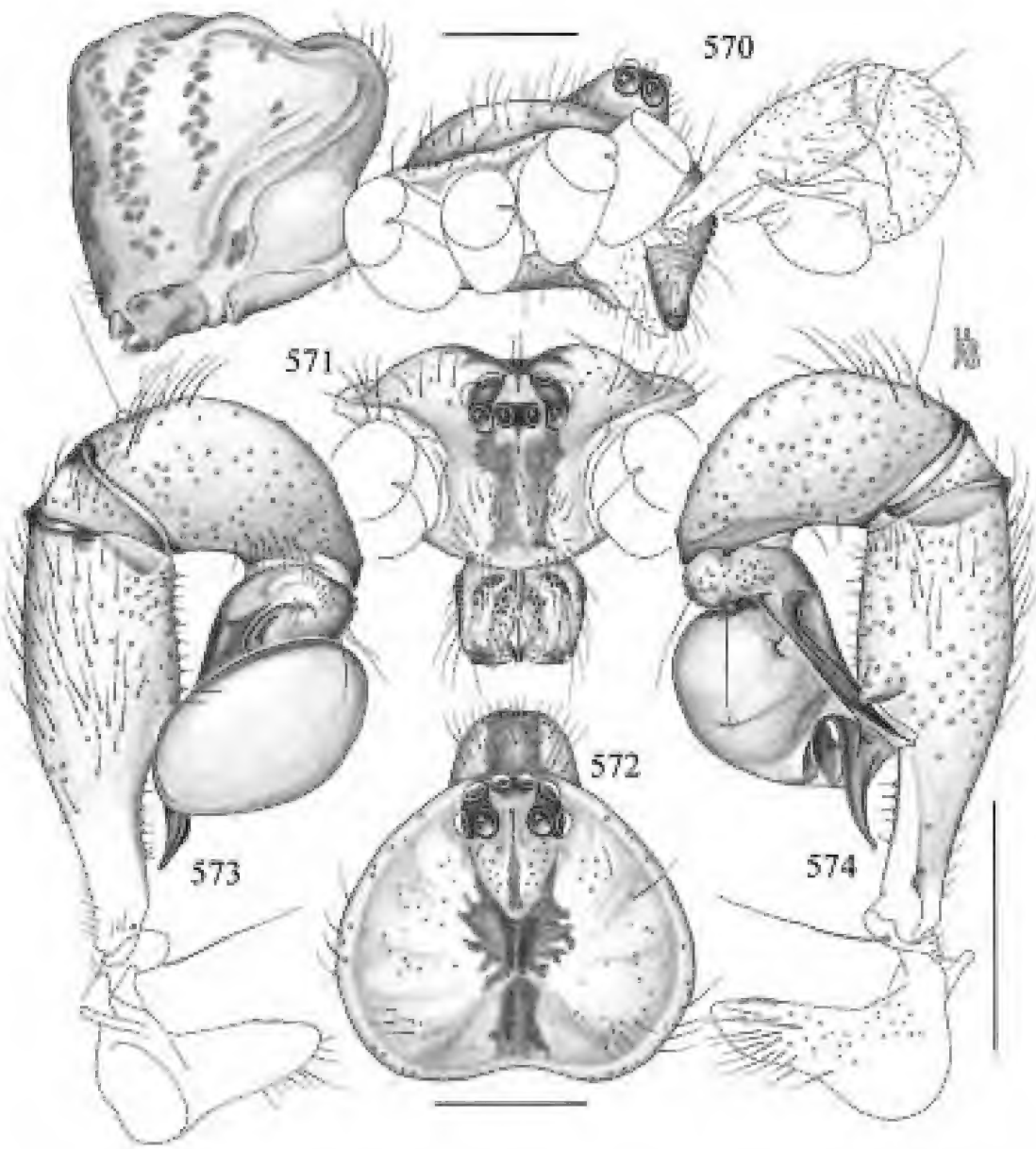
DISTRIBUTION: Widely distributed in Baja California, Mexico.

MATERIAL EXAMINED: MEXICO: *Baja California Sur*: Tortuga Island: type above; 5 mi N San Ignacio (Mission) (~ 27°30′N, 112°51′W), Jan. 20, 1965 (V. Roth), 1♂ in AMNH. *Baja California Norte*: 10 mi E El Rosario (~ 30°02′N, 115°36′W), May 5, 1961 (W. J. Gertsch & V. Roth), 1♂ in AMNH; 3 mi N Punta Prieta (~ 29°00′N, 114°15′W), Feb. 25, 1966 (V. Roth), 2♀ in AMNH; Bahia de los Angeles (28°55′N, 113°32′W), in building, Jan. 15, 1965 (V. Roth), 1♂ in AMNH; Isla Cedros (28°12′N, 115°15′W), May 25, 1945 (B. F. Osorio Tafall), 1♂ 2♀ in AMNH; San Francisquito Bay (28°26′N, 112°53′W), Oct. 5, 1921 (J. C. Chamberlin), 1♂ in AMNH. Unidentified and unspecified localities: "San Jose, Meling Ranch," May 1–4, 1961 (W. J. Gertsch & V. Roth), 1♂ 5♀ 1 juvenile in AMNH; "Bartola Bay," Mar. 12, 1953 (B. Firstman), 1♀ in AMNH; "S.Ca.," June 22, 1968 (William "et al.," 2 vials), 1♂ 1♀ 2 juveniles in AMNH; "in Boojum Trunk, Baja," Jan. 11, 1976 (Ward), 1♂ in AMNH.

IXCHELA, NEW GENUS

TYPE SPECIES: *Coryssocnemis furcula* F. O. Pickard-Cambridge, 1902.

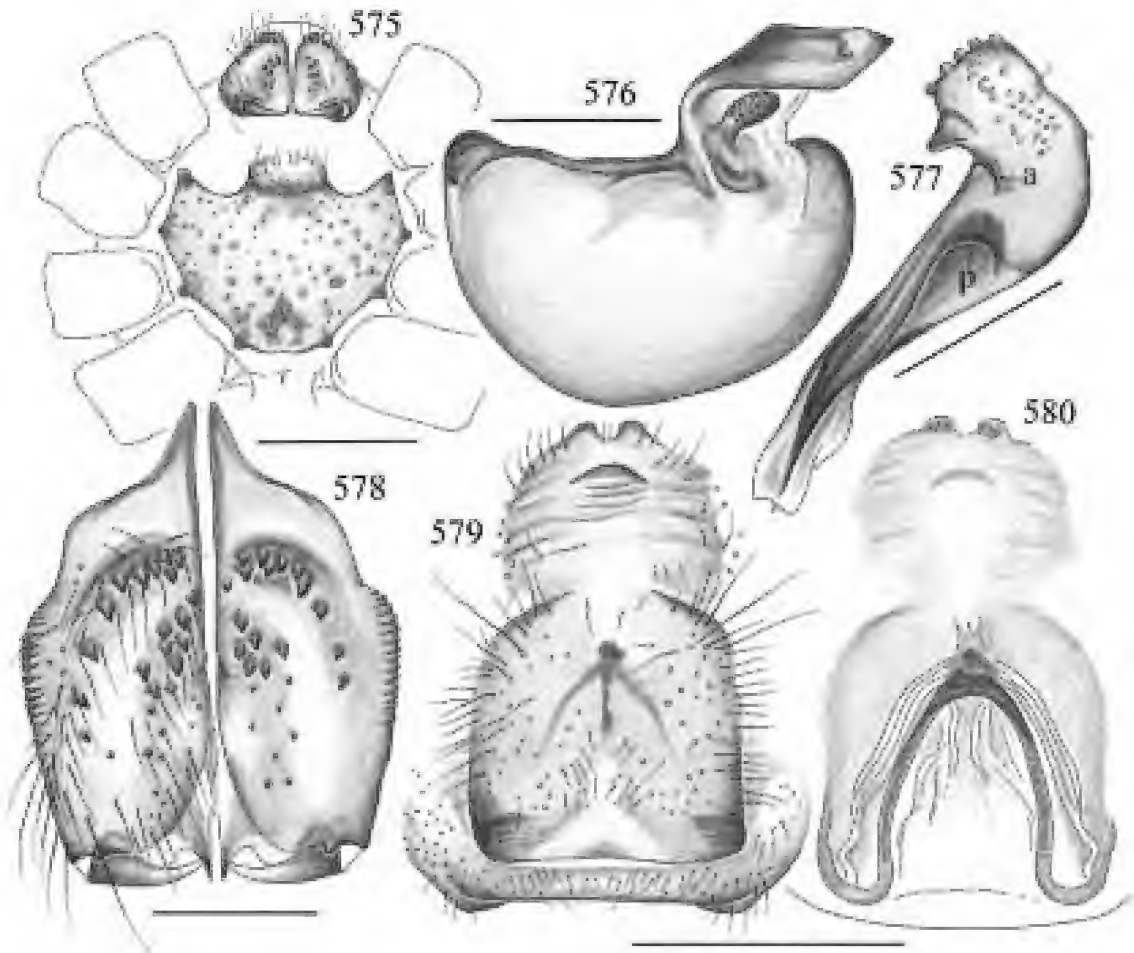
ETYMOLOGY: The generic name is derived from Ixchel, the Yucatec goddess of divination, midwifery, and curing, who was identified with the spider. Gender feminine.



Figs. 570–574. *Physocyclus mysticus* Chamberlin, male. **570**. Habitus, lateral view. **571–572**. Prosoma, frontal and dorsal views. **573**. Left palp, prolateral view. **574**. Left palp, retrolateral view. Scale lines: 1.0 mm.

DIAGNOSIS: Large (total length usually ~ 6–9 mm), dark, eight-eyed pholcids, with relatively long, robust legs and high opisthosoma; distinguished from all other pholcids by the distinctive roundish outgrowth prolateroventrally on the palpal bulb (see fig. 43 in Huber, 1998b); from the somewhat similar genus *Physocyclus* (which occurs in the same geographic area) by the slender, tapering procursus and the absence of numerous cones on the male chelicerae.

DESCRIPTION: Total length usually ~ 6–9 mm. Carapace with thoracic groove sometimes slightly widened anteriorly into de-



Figs. 575–580. *Physocyclus mysticus* Chamberlin. **575**. Male prosoma, ventral view. **576**. Left genital bulb. **577**. Left procursus, retrolateral view (a, p = apophysis and pocket). **578**. Male chelicerae, frontal view. **579**. Epigynum, ventral view. **580**. Epigynum, dorsal view. Scale lines: 1.0 mm (575, 579–580), 0.4 mm (576–578).

pression resembling pit of some other genera (*Holocnemus* group, *Physocyclus*, *Artema*); ocular area moderately elevated, with eight eyes, AME smallest; distance PME-ALE large (~ 100% of PME diameter). Male clypeus unmodified. Male chelicerae with pair of frontal apophyses [*I. furcula*, *pecki* (Gertsch)], or rounded protrusions [*I. simoni* (O. Pickard-Cambridge)], or both [*I. abernathyi* (Gertsch)]; without stridulatory ridges laterally. Male sternum without humps. Male palpal coxa with retrolateral apophysis, femur with retrolateral apophysis proximally, in some species (*I. furcula*, *pecki*, *simoni*) with tiny ventral protrusion distally (see fig. 44 in Huber, 1998b); procursus very simple, bulb with distal spines and distinctive prolateroventral roundish protrusion. Tarsal organ exposed (examined: *I. furcula*: fig. 92). Legs relatively long, very robust (leg 1 about 6–9 × total length; tibia 1 l/d about 30–40), leg formula 1423 (leg 4 only slightly longer than leg 2); legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at ~ 7–8%; tarsus 1 with ~ 40 very distinct pseudosegments. Opisthosoma high, either rounded or angular posteriorly, with large dark spots dorsally, often also with white spots. Male gonopore without epiandrous spigots (examined: *I. furcu-*

la). ALS with only one piriform gland spigot each (examined: *I. furcula*), other spinnerets typical for family.

Sexual dimorphism slight; epigynum prominent, with conspicuous protrusions, paired or unpaired.

MONOPHYLY: The species included share the unique prolateroventral protrusion on the genital bulb. Also, the almost identical overall shape of the entire male pedipalp in all known species strongly supports the monophyly of the group.

GENERIC RELATIONSHIPS: This genus shares several apomorphies with "typical" New World genera (exposed tarsal organ, male palpal coxa with retrolateral apophysis, male gonopore without epiandrous spigots, ALS with only one piriform gland spigot each, large PME-ALE distance). It particularly resembles *Aymaria* in overall shape, but no synapomorphies are known to me that would link the two genera, or that link *Ixchela* with any other sister group.

DISTRIBUTION: Widely distributed from northeastern Mexico to Nicaragua (see below).

COMPOSITION: The genus as construed here includes the five named species listed below, all of which were previously included in *Coryssocnemis* Simon. I have seen the types of all of these, and some unpublished material in the AMNH. Apart from that I have seen one undescribed species from Nicaragua, Matagalpa, Fuente Pura, 1♂ deposited in Museo Entomologico Nicaraguense, León, Nicaragua.

Ixchela abernathyi (Gertsch, 1971), new combination

Coryssocnemis abernathyi Gertsch, 1971: 56–57, figs. 19–22. – Gertsch, 1973: 147.

This species is widely distributed in northeastern Mexico (San Luis Potosí, Tamaulipas, Nuevo León).

Ixchela furcula (F. O. Pickard-Cambridge, 1902), new combination

Coryssocnemis furcula F. O. Pickard-Cambridge, 1902: 371; pl. 35, figs. 8, 8a–b. – Kraus, 1955: 14; pl. 2, figs. 22–23. – Huber, 1998b: 63–67, figs. 41–52; 1998d: fig. 3E.

Known from Guatemala, Honduras, and El Salvador.

Ixchela pecki (Gertsch, 1971), new combination

Coryssocnemis pecki Gertsch, 1971: 58, figs. 14–18. – Brignoli, 1974: 217.

Known only from southern Mexico (Chiapas)

Ixchela placida (Gertsch, 1971), new combination

Coryssocnemis placidus Gertsch, 1971: 57–58, figs. 28–29.

Known only from the female type specimen and three immature individuals, all from caves in Veracruz, Mexico. This might be a synonym of *abernathyi*, but males should be collected before deciding this matter.

Ixchela simoni (O. Pickard-Cambridge, 1898), new combination

Coryssocnemis simoni O. Pickard-Cambridge, 1898: 237–238; pl. 31, figs. 9, 9a–f. – F. O. Pickard-Cambridge, 1902: 371; pl. 35, figs. 7, 7a–b. – Strand, 1914: 820 (see below). – Gertsch, 1971: 56.

Only the female has been described, but the AMNH has males and females from various localities in central Mexico (Queretaro, Hidalgo, Michoacan, Guerrero). Strand's (1914) Colombian record of the species resulted very probably from the misidentification of a *Priscula* species.

AYMARIA, NEW GENUS

TYPE SPECIES: *Coryssocnemis conica* Banks, 1902.

ETYMOLOGY: The generic name honors the Aymara people, a vast group among the aboriginal people of South America, who by 1600 were reduced to a fourth of their preconquest numbers by slavery under the Spanish empire.

DIAGNOSIS: Medium-sized to large (total length 3–5 mm), usually dark, eight-eyed pholcids (troglobites pale and eyeless), with medium-long legs; distinguished from similar genera (e.g., *Ixchela*, n. gen., *Priscula* Si-

mon) by the shape of the apophyses frontally on the male chelicerae overhanging the fangs (fig. 587; only in *A. pakitza*, n. sp., are they too small to overhang the fangs: fig. 601), the roughly circular indentation (pit) on the carapace, and the tent-shaped position of the pore plates in the female internal genitalia (figs. 592, 600, 605).

DESCRIPTION: Total length ~ 3–5 mm. Carapace with small to distinct round indentation (pit) behind ocular area; ocular area moderately elevated, with eight eyes, AME smallest; distance PME-ALE very large (~ 100–120% of PME diameter). Male clypeus unmodified. Male chelicerae with pair of distinctive apophyses distally, overhanging fangs (except in *A. pakitza*); without stridulatory ridges laterally. Male sternum without humps. Male palpal coxa with retrolateral apophysis, femur with retrolateral apophysis proximally, ventral bulge distally (fig. 609); procursus very simple but with distinctive tip, bulb with apophysis distally on embolar division. Tarsal organ exposed (examined: *A. conica*: fig. 94). Legs relatively long (leg 1 about 6.5–11 × body length; tibia 1 l/d: 34–83), leg formula 1423 (legs 2 and 4 almost of same length); usually without spines, without curved and vertical hairs (*A. pakitza* with curved hairs); retrolateral trichobothrium of tibia 1 very proximal (at ~ 5–6%); tarsus with 25 or more pseudosegments, which are very distinct distally. Opisthosoma high, either rounded, angular, or pointed posteriorly, with large dark spots dorsally. Male gonopore without epiandrous spigots (examined: *A. conica*). ALS with only one piriform gland spigot each (examined: *A. conica*), other spinnerets typical for family.

Sexual dimorphism slight. Epigynum consisting of anterior and large posterior plate (figs. 591, 604); pore plates in tentlike position (figs. 592, 600, 605). Some species with paired "stridulatory" apparatus dorsally between prosoma and opisthosoma (in females only).

MONOPHYLY: The species included share the unique position of the pore plates in the female internal genitalia; they further share many details in the shape of the pedipalp (the only interspecific differences occur on the procursus tip and the embolar division of the bulb), and are extremely similar in overall shape.

GENERIC RELATIONSHIPS: This genus shares several apomorphies with "typical" New World pholcids (exposed tarsal organ, male palpal coxa with retrolateral apophysis, large distance PME-ALE, male gonopore without epiandrous spigots, ALS with only one piriform gland spigot each), and seems particularly close to *Ixchela*, but this is only based on habitus, large size, and the simple, pointed procursus. The "pit" in the prosoma is similar to that in the Old World *Holocnemus* group (and *Artema* and some *Physocyclus*), but this is here interpreted as convergence.

SPECIFIC RELATIONSHIPS: The four nominal species from the Galápagos Islands have apparently indistinguishable genitalia, and are thus almost certainly a monophyletic group (two of these species may actually be synonyms; see Notes under *A. conica* below). They also share the stridulatory apparatus in the female, but this is also present in an undescribed species from Peru (Cajamarca, San Benito), in MUSM.

DISTRIBUTION: Widely distributed from northern Argentina to Ecuador, and on the Galápagos Islands (map 4).

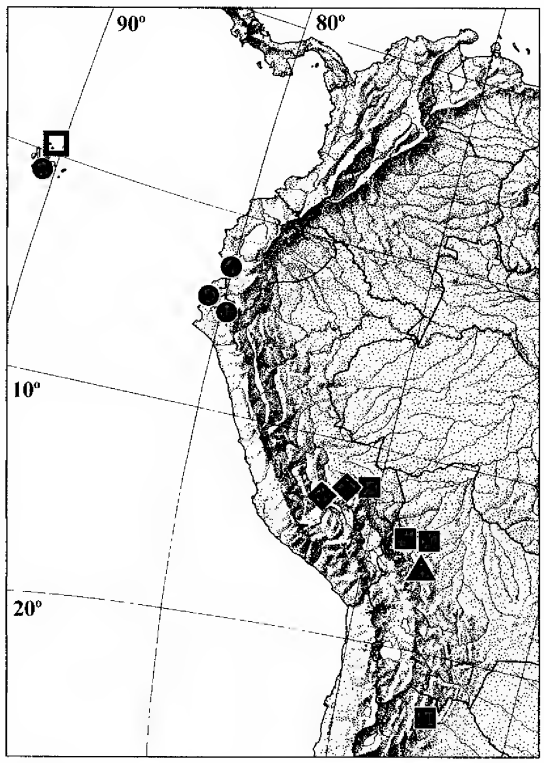
COMPOSITION: The genus as construed here includes seven nominal species. Of these, *A. conica*; *calilegua*, n. sp.; *pakitza* n. sp.; and *dasyops* (Mello-Leitão) are treated below. *A. insularis* (Banks), *jarmila* (Gertsch and Peck), and *floreana* (Gertsch and Peck) are discussed under *A. conica*. I have seen two additional species, one from Peru (see above), and one from Ecuador, with much longer male cheliceral apophyses, but otherwise very similar to *A. conica* (deposited in CAS; poorly preserved).

Aymaria conica (Banks, 1902), new combination

Figures 94, 103, 581–592

Coryssocnemis conica Banks, 1902: 56; pl. 1: figs. 1–3. – Roth and Craig, 1970: 118. – Baert and Maelfait, 1986: 107. – Baert et al., 1989a: 45; 1989b: 16–17. – Baert et al., 1991: 338. – Gertsch and Peck, 1992: 1186–1187, figs. 1–6, 12–14.

TYPES: Male lectotype, and a female prosoma only, from Hood Island (Isla Española),



Map 4. Known distribution of the genus *Aymaria*, n. gen.: *A. conica* (Banks) (circles); *A. insularis*, *jarmila*, *floreana* (light square); *A. pakitza*, n. sp. (diamonds); *A. calilegua*, n. sp. (dark squares); *A. dasyops* (Mello-Leitão) (triangle).

Galápagos Islands, Ecuador; May 18, 1899 (Hopkins Stanford Galápagos Expedition), in AMNH, examined.

DIAGNOSIS: Distinguished from *A. calilegua*, *pakitza*, and *dasyops* by the pointed end of the procursus (fig. 588); from *A. pakitza* also by the shape of the epigynum (fig. 591) and the larger apophysis on the male chelicerae (fig. 587); from *A. insularis* supposedly by the posteriorly pointed opisthosoma and the shorter legs (*A. insularis* may in fact be a synonym of *A. conica*; see Notes below); from *A. jarmila* and *A. floreana* by the presence of eyes.

MALE (lectotype): Carapace width 1.3; tibia 2: 4.8.

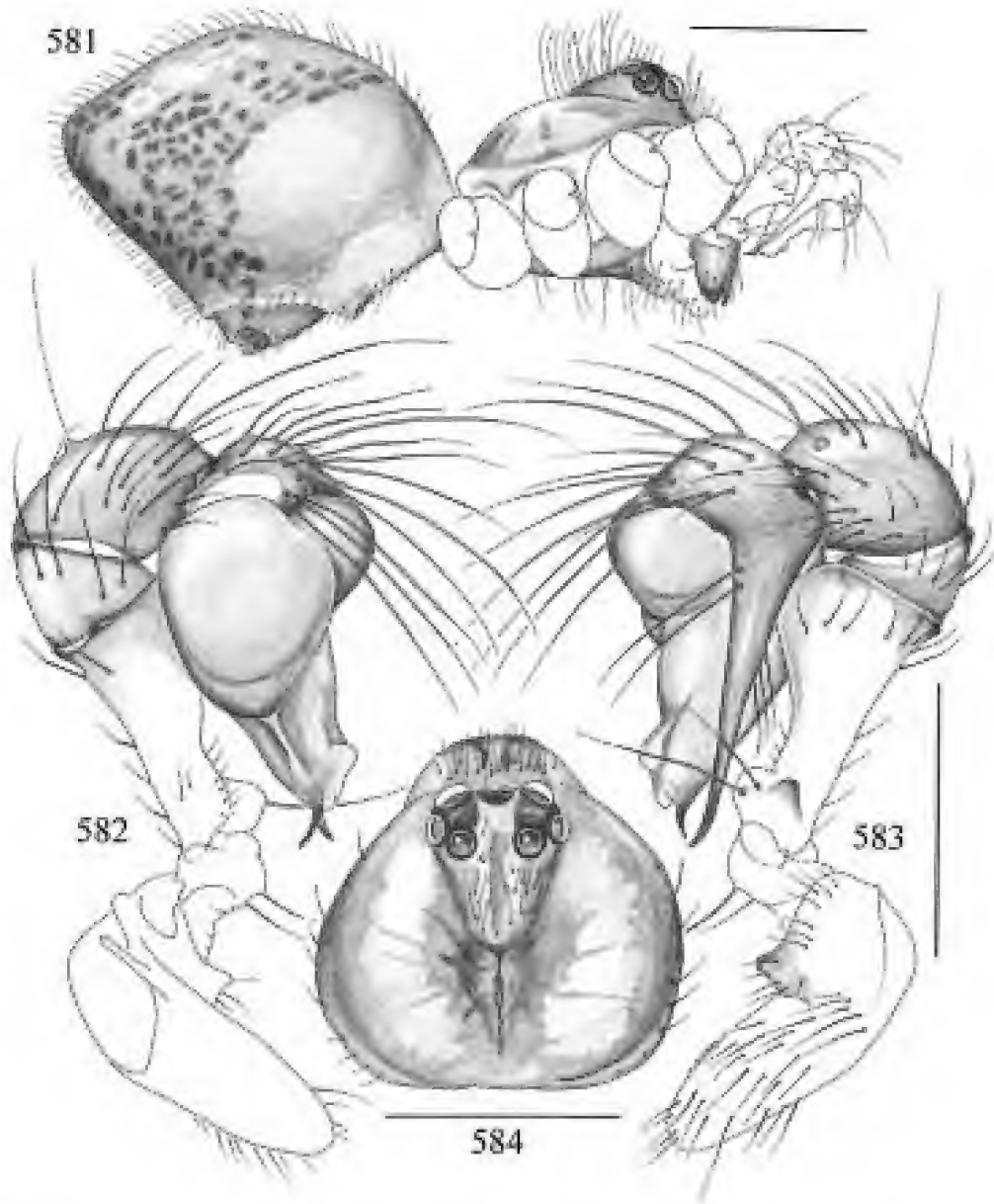
The following data are from a male from Santa Cruz Island: Total length 3.2, carapace width 1.5; leg 1: 27.2 (7.2+0.7+6.9+10.4 +2.0), tibia 2: 4.3, tibia 3: 3.3, tibia 4: 4.7; tibia 1 l/d: 41. Habitus and prosoma shape as in figs. 581, 584–586; distance PME-ALE about 120% of PME diameter. Carapace light brown with darker margins, ocular area and clypeus darker brown, sternum light brown. Chelicerae light brown with pair of dark brown apophyses overhanging fangs (fig. 587). Palps as in figs. 582–583, light brown; coxa with distinct retrolateral apophysis, femur with proximal protrusion and distal bulge, procursus with pointed end, with transparent membranous elements at tip (fig. 588), bulb with spinelike apophysis distally (fig. 589). Tarsal organ exposed (fig. 94). Legs light brown, with dark rings on femora (subdistally) and tibiae (proximally and subdistally); legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 6%; tarsus 1 with ~ 27 pseudosegments. Opisthosoma pale ochre, with many dark spots posteriorly and dorsally; gonopore without epiandrous spigots; ALS with only one piriform gland spigot each.

FEMALE: Tibia 1 in 13 females with rather pointed opisthosoma: 3.3–8.3 (!) ($\bar{x}$ = 5.1). In general very similar to male. Epigynum usually very elevated (fig. 590), but this varies considerably (probably depending on amount of sperm in uterus externus); internal genitalia with pair of pore plates in tentlike position (fig. 592). Stridulation between pair of roundish humps posteriorly on carapace and pair of granulated plates frontodorsally on opisthosoma. The striated region frontally on epigynum (fig. 591; called "rasping grate" by Gertsch and Peck, 1992) has probably nothing to do with stridulation.

VARIATION: Tibia 1 in eight males: 4.9–10.7 ($\bar{x}$ = 7.7). The opisthosoma apparently varies from rounded to pointed with all intermediates (see Notes below).

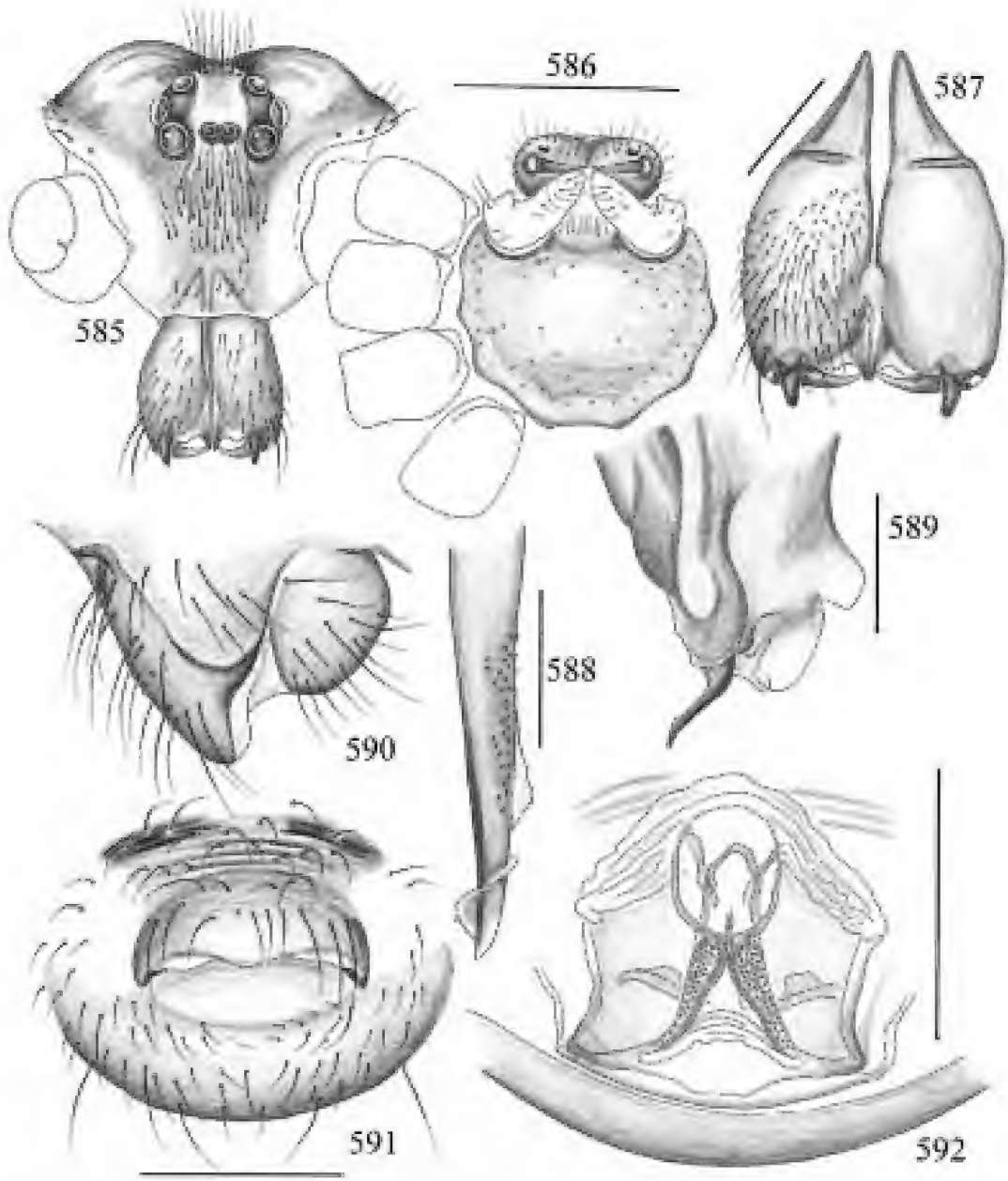
DISTRIBUTION: Apparently on most or all Galápagos Islands, as well as in Ecuador (mainland) and northern Peru (Piura) (map 4).

MATERIAL EXAMINED: ECUADOR, GALAPAGOS ISLANDS: *Española Island*: types above; Punta Cevallos, Jan. 5, 1983 (Y. Lubin), 1♂ 1 juvenile in MCZ; *San Cristobal*: "vic. El Junco" (crater lake), ~ 700 m elev., Apr. 15–16, 1970 (R. Silberglied), 2♂ 2♀ (4 vials) in MCZ; same data, in lichens and mosses on *Psidium guayaba*, 1♂ in MCZ; *Santa Cruz*: "vic. Mirador" (W of Media



Figs. 581–584. *Aymaria conica* (Banks), male. **581**. Habitus, lateral view. **582**. Left palp, prolateral view. **583**. Left palp, retrolateral view. **584**. Prosoma, dorsal view. Scale lines: 1.0 mm (581, 584), 0.5 mm (582–583).

Luna), May 26, 1970 (R. Silberglied), 1♀ in MCZ; pampas region, ~ 2 km W & N Media Luna, ~ 700 m elev., June 4, 1970 (R. Silberglied), 1♂ 1 juvenile (2 vials) in MCZ; above Media Luna, 1950 ft elev., Miceniazone, Apr. 17, 1981 (Y. Lubin), 1♀ in MCZ; *S. Plaza*: 5 m elev., in dead fallen *Opuntia* sp., Mar. 6–7, 1970 (R. Silberglied), 1♀ in MCZ; *Isla Rabida*: May 12, 1981 (Y. Lubin), 1♀ 1 juvenile in MCZ; *Isla Santiago*: E Side: Los Guayabitos, from lava tube, Feb. 27, 1983 (collector not given), 1♂ in MCZ; SE Cumpleaños (''tortoise nesting zone C''), Mar. 11, 1983 (C. Marquez), 1♀ in MCZ;



Figs. 585–592. *Aymaria conica* (Banks). **585–586**. Male prosoma, frontal and ventral views. **587**. Male chelicerae, frontal view. **588**. Left procursus, retrolateral view. **589**. Left embolar division of bulb, prolateral view. **590–591**. Epigynum, lateral and ventral views. **592**. Epigynum, dorsal view. Scale lines: 1.0 mm (585–586), 0.3 mm (587, 590–592), 0.1 mm (588–589).

Santa Fé: S Coast, Jan. 28, 1983 (Y. Lubin), 1♀ in MCZ; ECUADOR (mainland): Puná Island, Jan. 23–26, 1941 (D.L.F.), 2♂ in CAS; Guabillo, 20 km W Arenillas, Oct. 29, 1942 (no collector given), 1♀ assigned tentatively, in CAS; PERU: *Piura*: Quebrada Mogollon (4°32′S, 81°04′W), June 11, 1939 (“D.L.F. & H.E.F.”), 2♂ 1♀ in MCZ; 12 km SW Fernández (~ 4°12′S, 80°51′W), Jan. 1, 1939 (“D.L.F. & H.E.F.”), 1♂ 3♀ 2 juveniles

in MCZ; Canchaque (5°24′S, 79°36′W), ~ 800 m elev., Mar. 24, 1989 (D. Silva) 3♂ 3♀ in MUSM.

NOTES: The main point in the present context is that the four Galápagos species previously included in *Coryssocnemis* Simon are not closely related to the type species *C. callaica* Simon, but are part of a distinct group of species (herein considered a genus) widely distributed in western South America. With the material examined, I am reluctant to make statements concerning the number and diagnostic characteristics of the Galápagos species involved. At least two species occur on the islands, one epigean with eight well-developed eyes, and one completely eyeless cavernicole species. The genitalia are surprisingly similar (in fact, I have been unable to detect any genitalic differences, see below), but the complete absence of eyes in one group and the absence of intermediate forms strongly suggests that the two are reproductively isolated. The more confusing problem is that each group is currently again separated into two nominal species: the epigean *A. conica* (Banks) and *A. insularis* (Banks), and the blind *A. jarmila* (Gertsch and Peck) and *A. floreana* (Gertsch and Peck). I suspect that one name in each group is a synonym, but more material should be studied and rigorously compared to allow a convincing solution. The following hints may be useful for future studies at the species level.

Banks (1902) described the two epigean species, and noted that in *insularis* "the legs are much stouter and longer than in [*conica*], and the abdomen is not prolonged above into a pointed cone, but broadly rounded behind, although it projects considerably over the spinnerets." Gertsch and Peck (1992) (in a paper that is full of contradictions, typing and other errors) added figures of the female genitalia supposedly showing diagnostic differences. All three proposed differences seem dubious: leg length and "stoutness" vary widely, as does the shape of the opisthosoma, and I have been unable to understand how Gertsch and Peck (1992) managed to see any epigynal differences. In fact, KOH preparations of the genitalia of the *insularis* holotype and another female identified by Gertsch as *insularis* showed no differences to preparations made from "typical" (i.e., pointed abdomen) *conica* females. The two supposed species are not geographically separated (they share several islands, and at least once, even the same cave).

The two cavernicole species were said to differ only in the female genitalia: in *floreana* the frontal "rasping grate" was said to be undivided, but divided in *jarmila*, and internal differences were figured by Gertsch and Peck (1992). Again, I have been unable to see these differences. KOH preparations of the genitalia of the holotypes of *jarmila* and *floreana* revealed no differences; both appear similar if not identical to the epigean species, and show little resemblance to the figures in Gertsch and Peck (1992). Finally, in one female from Floreana Island I examined (i.e., supposedly *floreana*), the rasping grate was clearly divided into two parts (i.e., as in *jarmila*).

Aymaria calilegua, new species

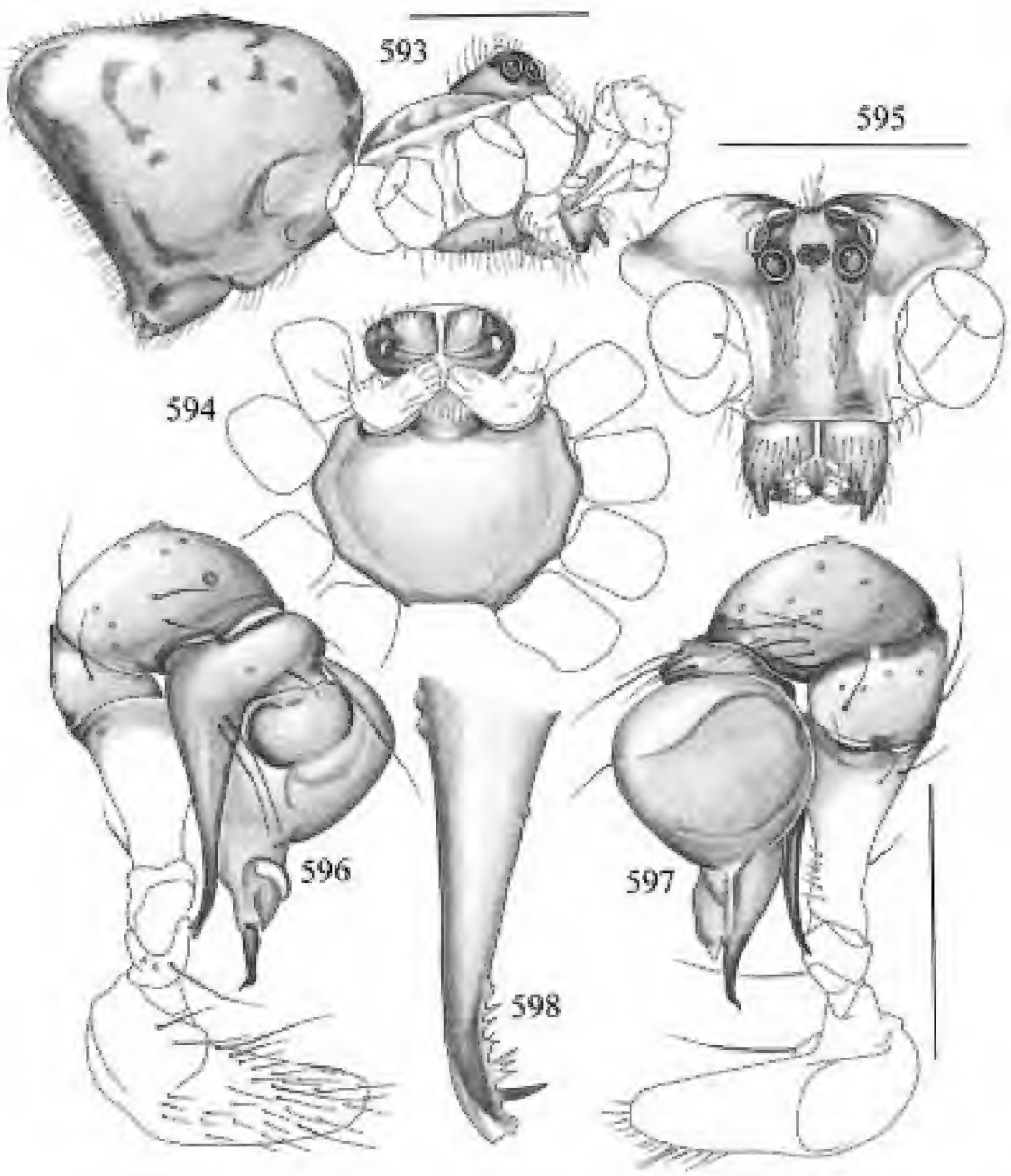
Figures 593–600

TYPE: Male holotype from Calilegua Nat. Park, Prov. Jujuy, Argentina; 600 m elev., "Mirador," forest, malaise, Dec. 18–28, 1987 (S. & J. Peck), in AMNH.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

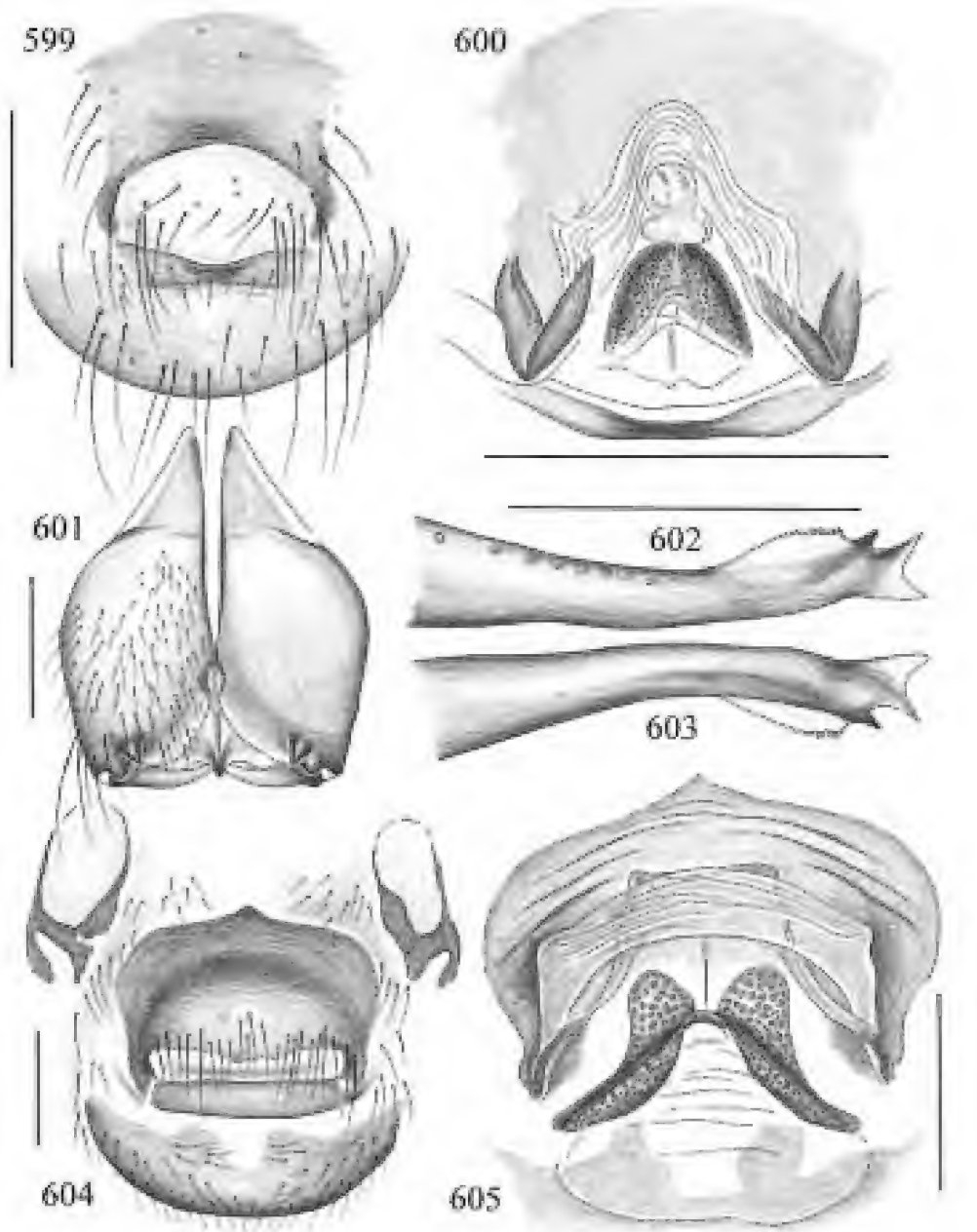
DIAGNOSIS: Distinguished from congeners by the serrated tip of the procursus (fig. 598); from *A. pakitza* also by the shape of the epigynum (compare figs. 599 and 604), and by the larger male cheliceral apophyses (compare figs. 595 and 601).

MALE (holotype): Total length 3.1, carapace width 1.5; leg 1: 34.7 (9.2+0.5+8.8 +14.3+1.9), tibia 2: 5.3, tibia 3: 3.9, tibia 4: 5.5; tibia 1 l/d: 69. Habitus and prosoma shape as in figs. 593–595, carapace with pit, light brown with dark brown mark behind ocular area; distance PME-ALE about 120% of PME diameter. Ocular area with dark brown median stripe and lateral margins, clypeus light brown, with pair of darker stripes (fig. 595), sternum orange-brown, dark brown margin and labium. Chelicerae brown with pair of dark brown apophyses overhanging fangs (fig. 595). Palp as in figs. 596–597, light brown; coxa with distinct retrolateral apophysis, femur with proximal



Figs. 593–598. *Aymaria calilegua*, n. gen., n. sp., male. **593**. Habitus, lateral view. **594–595**. Prosoma, ventral and frontal views. **596**. Right palp, retrolateral view. **597**. Right palp, prolateral view. **598**. Right procursus, dorsal view. Scale lines: 1.0 mm (593–595), 0.5 mm (596–597).

protrusion and distal bulge, procursus with serrated tip (fig. 598), bulb with distal spine-like apophysis (figs. 596–597). Femora of legs dark brown, tibiae and metatarsi light brown, without rings; legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 5%; tarsus 1 with ~ 25 pseudosegments. Opisthosoma pale greenish-ochre, with faint darker spots posteriorly and dorsally.



Figs. 599–605. *Aymaria* spp. 599–600. *A. calilegua*, n. gen., n. sp. **599**. Epigynum, ventral view. **600**. Epigynum, dorsal view. 601–605. *A. pakitza*, n. gen., n. sp. **601**. Male chelicerae, frontal view. **602**. Left procursus, ventral view. **603**. Left procursus, dorsal view. **604**. Epigynum, ventral view. **605**. Epigynum, dorsal view. Scale lines: 0.5 mm.

VARIATION: Tibia 1 in other males: 9.2, 9.5, 10.9, 12.7; in the two males from Calilegua Nat. Park, ''El Cortaderal'', the thoracic pit is more distinct than in the holotype. In some males the dark spots on the opisthosoma are quite distinct, and the legs have slightly darker rings (cf. female).

FEMALE: In general similar to male, but

rings on legs more distinct. Epigynum as in fig. 599, light brown, relatively small. Internally with pore plates in tentlike position (fig. 600). Without stridulatory apparatus (cf. *A. conica* and relatives on Galápagos islands). Tibia 1 in three females: 8.5, 9.5, 9.6.

DISTRIBUTION: Widely distributed in northern Argentina, Bolivia, and possibly southern Peru (the single female from Peru is assigned tentatively) (map 4).

MATERIAL EXAMINED: ARGENTINA: *Jujuy*: Calilegua Nat. Park: type above; Calilegua Nat. Park, 800 m elev., "El Cortaderal," km 6, forest, malaise, Dec. 18–28, 1987 (S. & J. Peck), 2♂ in AMNH. BOLIVIA: *La Paz*: Yungas, Mapiri, N La Paz, Aug. 11–15, 1989 (L. E Peña), 1♀ in AMNH. *Beni*: 16.8 mi SW Yucumo (15°23′S, 66°59′W), ~ 500 m elev., Nov. 15–19, 1989 (J. Coddington, C. Griswold, D. Silva, S. Larcher, E. Peñaranda), 3♂ 1♀ (3 vials) in USNM; Est. Biol. Beni (14°47′S, 66°15′W), ~ 225 m elev., Nov. 8–14, 1989 (J. Coddington, C. Griswold, D. Silva, S. Larcher, E. Peñaranda), 2♂ 1♀ (2 vials) in USNM. PERU: *Madre de Dios*: Parque Nacional Manú, Zona Reservada Pakitza, 356 m elev., (11°56′S, 71°17′W), Apr. 24–29, 1991 (D. Silva), 1♀ assigned tentatively, in USNM.

Aymaria pakitza, new species

Figures 601–605

TYPES: Male holotype, 4♂ 5♀ paratypes from Zona Reservada Pakitza (11°56′S, 71°17′W), Madre de Dios, Peru; 356 m elev., July 4, 1991 (D. Silva), in MUSM.

ETYMOLOGY: Named for the type locality. The species name is a noun in apposition.

DIAGNOSIS: Distinguished from all known congeners by the tiny male cheliceral apophyses (fig. 601), by the shape of the procursus tip (figs. 602–603), and the sclerotized arches at the book-lung covers (fig. 604).

MALE (holotype): Total length 4.7, carapace width 2.1; leg 1: 30.5 (7.5+0.8+7.7 +11.7+2.8), tibia 2: 5.1, tibia 3: 3.6, tibia 4: 5.1; tibia 1 l/d: 34. Habitus typical for the genus, except for the more rounded opisthosoma (resembling that of certain *Priscula* species, cf. fig. 501). Carapace orange brown with dark brown lateral margin and triangular median mark, with very narrow pit rather like widened thoracic groove than "real" pit as, e.g., in the *Holocnemus* group; ocular area dark brown, eye pattern as in congeners (cf. figs. 595, 607); distance PME-ALE about 100% of PME diameter. Clypeus dark brown; sternum dark brown, lateral margins light brown. Chelicerae dark brown with pair of unusually short apophyses in position typical for genus (fig. 601). Palp in general as in congeners, mostly dark brown, procursus as in figs. 602–603, bulb very similar to *A. conica* (cf. fig. 589), but terminal apophysis slightly longer. Legs brown, with dark brown rings on femora (two on distal half), tibiae (proximally, medially, distally; on tibia 1 only proximally); legs without spines; few vertical hairs on tibiae and metatarsi; curved hairs on femora, tibiae, and metatarsi; femur 3 slightly thicker than others; retrolateral trichobothrium of tibia 1 at 5%; tarsus 1 with ~ 25 distinct pseudosegments. Opisthosoma globular, greenish-gray with many distinct dark bluish spots, with large, dark brown epiandrous plate, brown border of book-lung cover (cf. female: fig. 604), and roughly rectangular brown plate in front of spinnerets.

VARIATION: Tibia 1 in two male paratypes: 8.0, 8.1. Femur 3 sometimes significantly thicker than others.

FEMALE: In general very similar to male; tibia 1 (N = 11) 6.8–7.6 ($\bar{x}$ = 7.1); opisthosoma usually significantly higher than long. Without stridulatory organ between prosoma and opisthosoma. Epigynum with dark, blackish anterior plate (fig. 604), brown borders of lung plates more distinct than in male. Internal genitalia as in fig. 605.

DISTRIBUTION: Known from southern Peru (Cuzco and Madre de Dios) (map 4).

MATERIAL EXAMINED: PERU: *Madre de Dios*: types above; same locality, July 3, 1991 (D. Silva), 2♂ in MUSM. *Cuzco*: Acjanaco-Tres Cruces (13°18′S, 71°40′W), Mar. 1991 and July 3, 1991 (4 vials, D. Silva), 4♀ 3 juveniles in MUSM; Machu Picchu, ruins, bamboo/cloud forest, 2400 m elev., Oct. 16, 1987 (J. Coddington), 1♂ 2♀ 4 juveniles (2 vials) in USNM; Wiñahuaina (~ 13°07′S, 72°34′W), 2700–3100 m elev., Feb 8–10, 1990 (D. Silva), 1♂ 1♀ in MUSM; Parque Nacional Manú, Carretera Paucartambo–Pilcopata, 2700 m elev., Feb. 18–19, 1990 (D. Silva) 2♀ in MUSM; same

locality, Feb. 19, 1990 (A. Cano & D. Silva) 1♀ 1 juvenile in MUSM.

Aymaria dasyops (Mello-Leitão, 1947), new combination

Figures 606–612

Psilochorus dasyops Mello-Leitão, 1947b: 163–164, fig. 10.

TYPE: Male lectotype (designated herein) and a prosoma (probably of an adult female) from "Chaco, Yungas," Bolivia; June 5, 1937 (H. E. Hinton), in BMNH (1940.12.30.50), examined.

DIAGNOSIS: Distinguished from congeners by the broadly ending, slightly bent procursus (figs. 611–612), and the rounded tip of the bulbal apophysis (fig. 610). From *A. pakitza* also by the longer male cheliceral apophyses (fig. 607).

MALE (lectotype): Total length 4.3, carapace width 1.8; leg 1: (14.7+0.7+13.9, metatarsus and tarsus missing), tibia 2 and 4 missing, tibia 3: 6.3; tibia 1 l/d: 83. Habitus and prosoma shape as in figs. 606–608, carapace ochre with brown radii and brown pit, ocular area dark brown, clypeus light brown, with many long hairs (fig. 606), sternum light ochre. Chelicerae light brown with pair of dark brown apophyses overhanging fangs (fig. 607). Palps as in figs. 609–610, very light brown; coxa with distinct retrolateral apophysis, femur with proximal protrusion and distal bulge, procursus ending broadly, ventrally with small subdistal semitransparent process (figs. 611–612). Femora of legs brown, more distal segments ochre; legs without spines, without curved and vertical hairs. Opisthosoma greenish-gray with many blackish spots, high posteriorly (fig. 606).

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality (map 4).

MATERIAL EXAMINED: BOLIVIA: "Chaco, Yungas": type above.

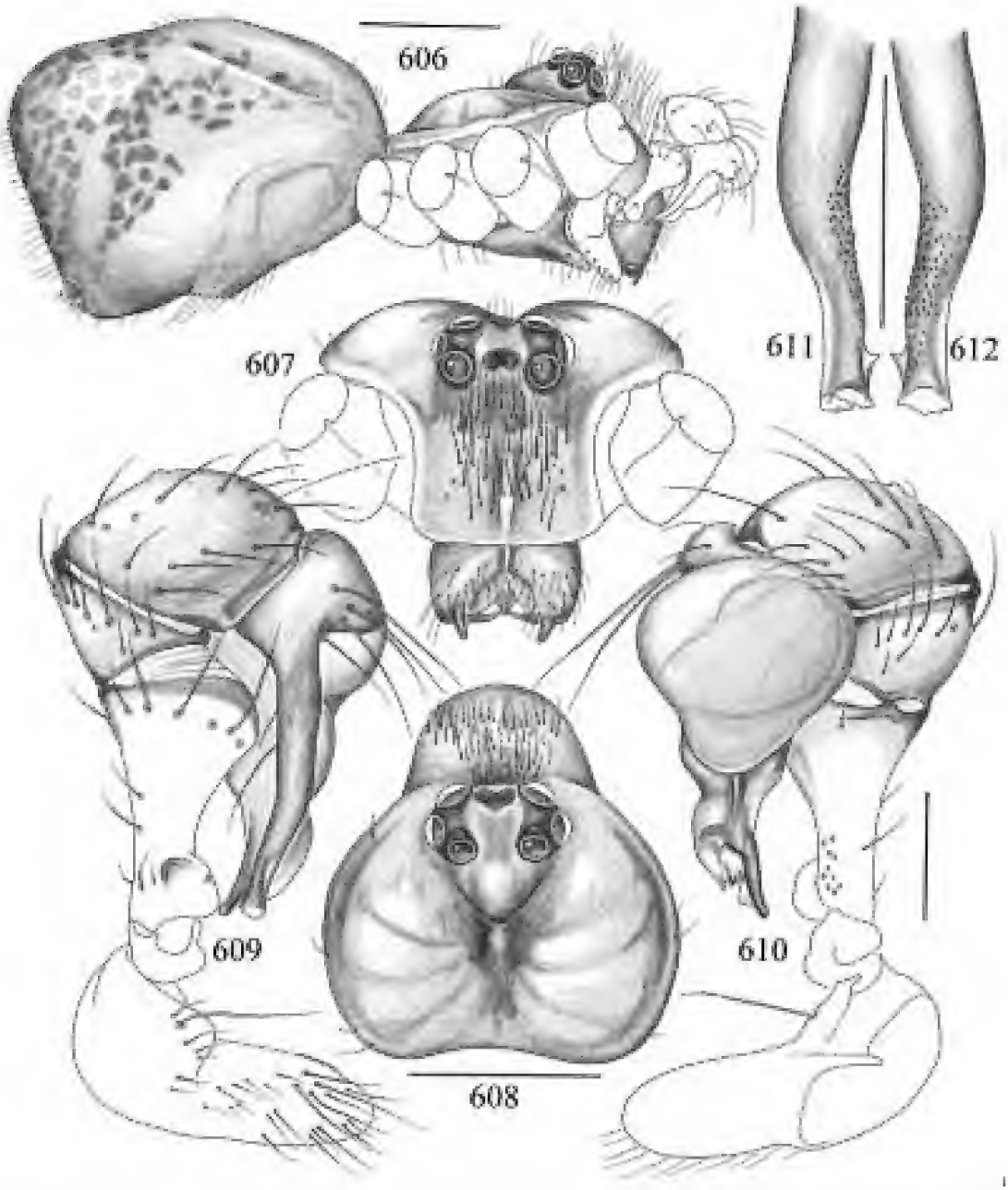
CHIBCHEA, NEW GENUS

TYPE SPECIES: *Chibchea ika*, new species.

ETYMOLOGY: The generic name honors the Chibcha Indians and their surviving acculturated descendants. The Chibcha are a people native to the high plateau of Colombia who declined rapidly after the arrival of the Spaniards and whose dialect had become extinct by the early 1700s. Gender feminine.

DIAGNOSIS: Tiny to medium-sized (total length 1.1–3.6 mm), usually dark pholcids with eight eyes (AME rarely rudimentary or absent), with short to medium-long legs, globular to oval to higher-than-long opisthosoma; distinguished by the short, almost cylindrical segments of the male palp, and by the projections or apophyses on the male cheliceral fangs (figs. 31, 620, 631, etc.; absent in Venezuelan and Chilean representatives and in the Peruvian *C. mateo*, n. sp., and *abiseo*, n. sp., which are assigned tentatively; see Specific Relationships below).

DESCRIPTION: Total length usually ~ 2.2–3.6 mm (*C. uru*, n. sp., only 1.1 mm). Carapace with distinct thoracic groove (very shallow in *C. uru*), ocular area low to moderately elevated, with eight eyes, AME smallest (absent in *C. uru*); distance PME-ALE relatively large (usually ~ 60–110% of PME diameter, only 30% in *C. uru*). Sternum without humps. Male clypeus unmodified. Basal segment of male chelicerae unmodified or with transverse ridge proximally (e.g., figs. 665, 681), with tiny to large apophyses originating from the fangs (the Venezuelan and Chilean representatives and *C. mateo* and *abiseo* have apophyses and/or modified hairs on the basal segments, but unmodified fangs); without stridulatory ridges laterally. Male palpal coxa with retrolateral apophysis (absent in *C. mayna*, n. sp.), femur short, almost cylindrical, with often very conspicuous retrolateral apophysis basally (e.g., figs. 658, 680); procursus and bulb variable. Tarsal organ exposed (examined: *C. ika*, n. sp.; *salta*, n. sp.; *araona*, n. sp.; *picunche*, n. sp.). Legs relatively short (leg 1 usually ~ 4–8 × total length; only 2.5 in *C. uru*, 10 in *C. malkini*, n. sp., and *silvae*, n. sp.; tibia 1 l/d usually 30–70; only 9 in *C. uru*); leg 1 usually longest, leg 2 about as long as leg 4, leg 3 shortest (in *C. uru* leg 4 longest: 4123); legs without spines and vertical hairs (only *C. silvae* with many vertical hairs on metatarsi); sometimes with curved hairs (on femora and/or tibiae + metatarsi); retrolateral trichobothrium of tibia 1 usually at ~ 10–35% (at 51% in *C. uru*); tarsus 1 usually with ~ 15–25 pseudosegments (only ~ 10 in *C.*



Figs. 606–612. *Aymaria dasyops* (Mello-Leitão), male lectotype. **606**. Habitus, lateral view. **607–608**. Prosoma, frontal and dorsal views. **609**. Right palp, retrolateral view. **610**. Right palp, prolateral view. **611**. Right procursus, prolateral view. **612**. Right procursus, retrolateral view. Scale lines: 1.0 mm (606–608), 0.3 mm (609–612).

uru). Opisthosoma variable in shape, with dark spots dorsally. Male gonopore without epiandrous spigots (examined: *C. ika*, *salta*, *araona*, *picunche*). ALS with only one piriform gland spigot each (examined: *C. ika*, *salta*, *araona*, *picunche*), other spinnerets typical for family.

Sexual dimorphism slight. Females often

with more distinct dark rings on legs. Epigynum variable in shape.

MONOPHYLY: The species of the core-group (*C. ika*, *valle*, *mayna*, *salta*, *aberrans*, *araona*, *uru*, *silvae*, *malkini*) share the apophyses on the male cheliceral fangs, and the short, cylindrical segments of the male palp. The Venezuelan and Chilean species and *C. mateo* and *abiseo* are included tentatively (see Specific Relationships below).

GENERIC RELATIONSHIPS: Two other genera share apophyses on the male cheliceral fangs (*Galapa*, *Blancoa*: figs. 30, 32), but in these the apophyses originate from the bases of the fangs rather than from the middle, and the genitalia are very different. Other than that, only the placement within the New World clade is beyond doubt (large distance PME-ALE, retrolateral coxal apophysis, reduction of epiandrous spigots and ALS piriform spigots, exposed tarsal organ). The close relationship with *Carapoia* suggested by the cladogram in appendix 2 is based on the presence of curved hairs on the legs and is very probably artificial.

SPECIFIC RELATIONSHIPS: The genus can tentatively be divided into four operational species groups: (1) a possibly monophyletic northern group from Colombia and Ecuador (*C. ika*, *valle*, *mayna*) with a sculptured epigynum that is provided with pits or pockets (presumably for the male cheliceral apophyses); *C. merida* and *tunebo* have a very distinct armature on the male chelicerae (and lack sexual modifications of the fangs), but they have almost identical procursi, proximal palpal segments, and prosoma shape as the type species, and are therefore included tentatively in this group and in the genus (note that they have been collected very close to the type locality of *C. ika*, the type species!); (2) a possibly monophyletic southern group from Peru, Bolivia, Argentina (*C. salta*, *aberrans*, *araona*, *uru*, *silvae*, *malkini*) with a very conspicuous retrolateral apophysis basally on the femur and a rather pointed retrolateral coxal apophysis on the male palp; additionally, these species share a small, distinctive apophysis on the male palpal trochanter (e.g., figs. 658, 688; absent only in *C. uru*), and prominent transverse ridges proximally on the male chelicerae; (3) a Chilean group (*C. picunche*, *mapuche*, *elqui*), that lacks the primary synapomorphy of the genus (fang apophyses), but is otherwise very similar (overall size and habitus, leg length, curved hairs on legs), and therefore assigned tentatively to the genus; (4) a Peruvian group (*C. mateo*, *abiseo*) that is similar and possibly close to the Chilean group.

DISTRIBUTION: Widely distributed in western South America, from Colombia (and possibly eastern Venezuela; see Specific Relationships above) to Argentina (and possibly Chile; see Specific Relationships above). Apparently restricted to the Andean region.

COMPOSITION: The genus as construed here includes 16 named species, 15 of which are new. All 16 species are treated below. I have seen numerous further species from Ecuador, Peru, Bolivia, Paraguay and Chile (AMNH, CAS, MUSM, USNM).

Chibchea ika, new species

Figures 189, 197, 613–624

TYPES: Male holotype, 9♂ 10♀ paratypes from San Sebastian de Rabago (10°34′N, 73°36′W), Sierra Nevada de Santa Marta, Dept. César, Colombia; 2000 m elev., from dry banana leaves, Apr. 11–14, 1968 (B. Malkin), in AMNH.

ETYMOLOGY: The species name is a noun in apposition honoring the Ika Indians, a seminomadic people in northern Colombia.

DIAGNOSIS: Closely related to *C. valle*, distinguished by the spiraling bulbal apophysis (fig. 619), by the shape of the procursus (fig. 621) and by the shape of the apophyses on the male cheliceral fangs (fig. 620); from other congeners also by the shape of the epigynum (figs. 622–623).

MALE (holotype): Total length 2.3, carapace width 1.0; leg 1: 14.4 (3.5+0.4+3.7 +5.5+1.3), tibia 2: 2.6, tibia 3: 1.9, tibia 4: 2.5; tibia 1 l/d: 36. Habitus as in fig. 613. Carapace with distinct thoracic groove (fig. 615), brown, with broad median darker stripe and black central line, eight eyes on brown elevated ocular area (figs. 614–615); distance PME-ALE about 110% of PME diameter. Clypeus brown, sternum wide (fig. 616), light ochre-brown, slightly darker anteriorly; basal segments of chelicerae unmodified, but fangs with small apophyses (fig. 620). Palps as in figs. 617–618; coxa with distinct retro-

lateral apophysis, femur with basal retrolateral protrusion, procursus simple (fig. 621), bulbal apophysis spiraling, with denticles (fig. 619); tarsal organ exposed. Legs light ochre-brown, with darker rings on femora (subdistally) and tibiae (proximally and subdistally); curved hairs on tibiae and metatarsi; without vertical hairs and spines; retrolateral trichobothrium of tibia 1 at 15%; tarsus 1 with ~ 20 pseudosegments. Opisthosoma gray-brown, with large dark spots dorsally, genital plate trapezoidal, brown; gonopore without epiandrous spigots; ALS with only one piriform gland spigot each (fig. 189).

VARIATION: Tibia 1 in 9 other males: 3.7–4.3 ($\bar{x}$ = 3.9).

FEMALE: Total length (N = 10) 1.9–2.9 ($\bar{x}$ = 2.3); tibia 1 (N = 10) 2.4–3.1 ($\bar{x}$ = 2.7). Habitus as in male. Epigynum brown, with anterior knob provided with pair of lateral indentations (figs. 622–623). Internal genitalia with pair of large pore plates and apparently anterior receptacle (fig. 624).

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: COLOMBIA: *César:* San Sebastian de Rabago: types above; same locality and collector, all in AMNH: Apr. 1–6, 1968, 3♂ 11♀ sifted from rotten banana leaves and ground debris; Apr. 1–10, 1968, 1♂ 3♀ some juveniles beaten from dry leaves; Apr. 11–14, 1968, banana plantation, 2♀ some juveniles beaten from dry foliage; Apr. 12, 1968, 1♂ from house.

NOTE: The distance between the indentations on the epigynal knob coincides with the distance between the apophyses on the male cheliceral fangs. Together with what is known about copulation in pholcids (Huber and Eberhard, 1997) this suggests that the male apophyses grasp the knob during copulation.

Chibchea valle, new species
Figures 625–630

TYPE: Male holotype from near Cali, Dept. del Valle, Colombia; 1000 m elev., no date (W. G. Eberhard), in MCZ.

ETYMOLOGY: Named for the Colombian Departamento del Valle. The specific name is a noun in apposition.

DIAGNOSIS: Close relative of *C. ika*, distinguished by the bulbal apophysis that is not spiraling (fig. 629), the procursus that is distally more slender (fig. 628), and the smaller apophyses on the cheliceral fangs (fig. 630).

MALE (holotype): Total length 2.4, carapace width 1.0; leg 1: 19.9 (4.7+0.3+4.9 +8.9+1.1), tibia 2: 3.2, tibia 3: 2.6, tibia 4: 3.3; tibia 1 l/d: 56. Habitus and prosoma shape as in figs. 625–627. Carapace ochre with brown marks medially and laterally (fig. 627), ocular area less elevated than in *C. ika* (fig. 625), and distance PME-ALE smaller (~ 60% of PME diameter). Clypeus with pair of broad brown bands (fig. 626), sternum light brown; chelicerae almost identical to *C. ika*, but with shorter apophyses on fangs (fig. 630). Palps very similar to *C. ika* (cf. figs. 617–618), but coxal apophysis narrower and basal femur apophysis longer; procursus and bulbal projection as in figs. 628–629. Legs light ochre-brown, without markings; without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 9%; tarsus 1 with ~ 20 pseudosegments. Opisthosoma dark greenish, indistinct blackish spots dorsally, trapezoidal genital plate, dark bluish band between genital plate and spinnerets.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: COLOMBIA: *Dept. del Valle*: near Cali: type above.

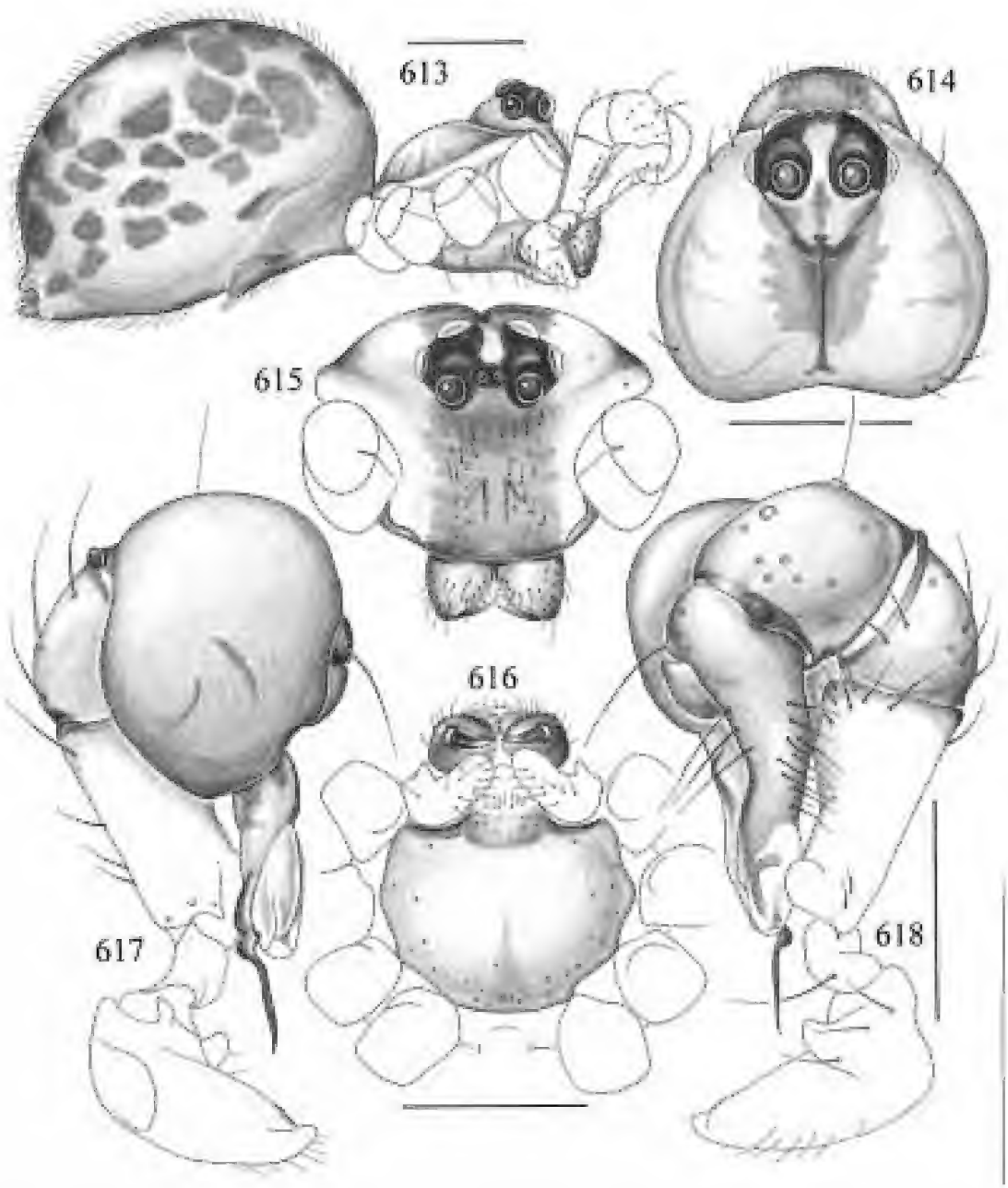
Chibchea mayna, new species
Figures 631–639

"Ecuadorian pholcid, I.D. #3": Huber, 1999: figs. 14–16.

TYPES: Male holotype, 1♀ paratype from Cuenca, Dept. Azuay, Ecuador; Apr. 3, 1942 ("DLF, HEF"), in CAS.

ETYMOLOGY: The species name is a noun in apposition honoring the Mayna people in Ecuador and Peru. They aggressively fought outsiders during the 1930s gold rush, but are now rapidly being acculturated.

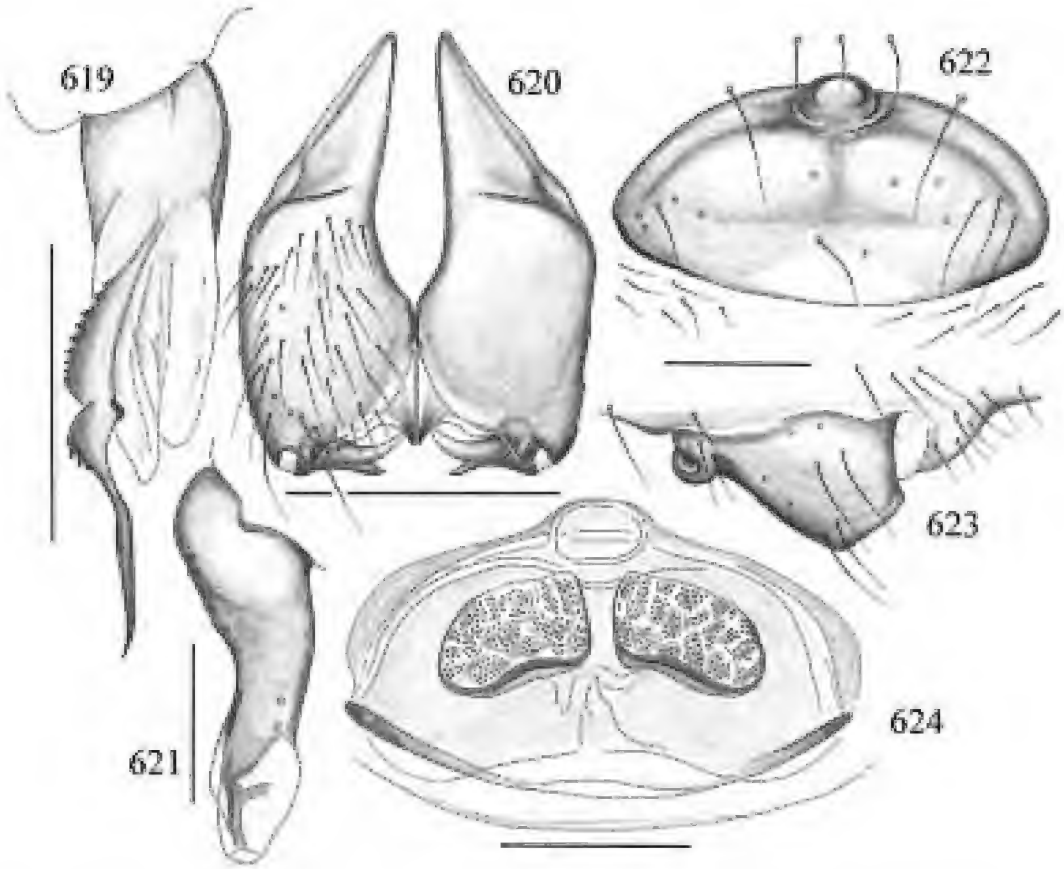
DIAGNOSIS: Easily distinguished from congeners by the long apophyses on the male cheliceral fangs (fig. 631). Also distinguished by the relatively complicated tip of the procursus (figs. 635–636), the conspicuous prolateral apophysis on the bulb (fig. 632), and



Figs. 613–618. *Chibchea ika*, n. gen., n. sp., male. **613**. Habitus, lateral view. **614–616**. Prosoma, dorsal, frontal, and ventral views. **617**. Left palp, prolateral view. **618**. Left palp, retrolateral view. Scale lines: 0.5 mm (613–616), 0.3 mm (617–618).

the wide epigynum with lateral pockets (figs. 637–639).

MALE (holotype): Total length 2.5, carapace width 1.2; leg 1: 14.1 (3.6+0.4+3.7 +5.2+1.2), tibia 2: 2.3, tibia 3: 2.0, tibia 4: 2.8; tibia 1 l/d: 40. Habitus and prosoma shape as in *C. ika* (cf. figs. 613–616); distance PME-ALE about 110% of PME diameter. Carapace brown with darker median mark, ocular area and clypeus brown with



Figs. 619–624. *Chibchea ika*, n. gen., n. sp. **619**. Embolar division of left bulb, prolateral view. **620**. Male chelicerae, frontal view. **621**. Left cymbium with procursus, retrolateral view. **622–623**. Epigynum, ventral and lateral views. **624**. Epigynum, dorsal view. Scale lines: 0.2 mm.

darker bands laterally (fig. 631); chelicerae brown, basal segment unmodified, fangs with long apophyses directed laterally (fig. 631). Palps in general very similar to *C. ika*, but without retrolateral coxal apophysis; procursus and bulb tips distinctive (figs. 632–636). Legs brown with faint blackish rings on femora (distally) and tibiae (distally), almost all hairs missing; tarsus 1 with ~ 20 pseudosegments. Opisthosoma dark greenish-gray with blackish spots dorsally.

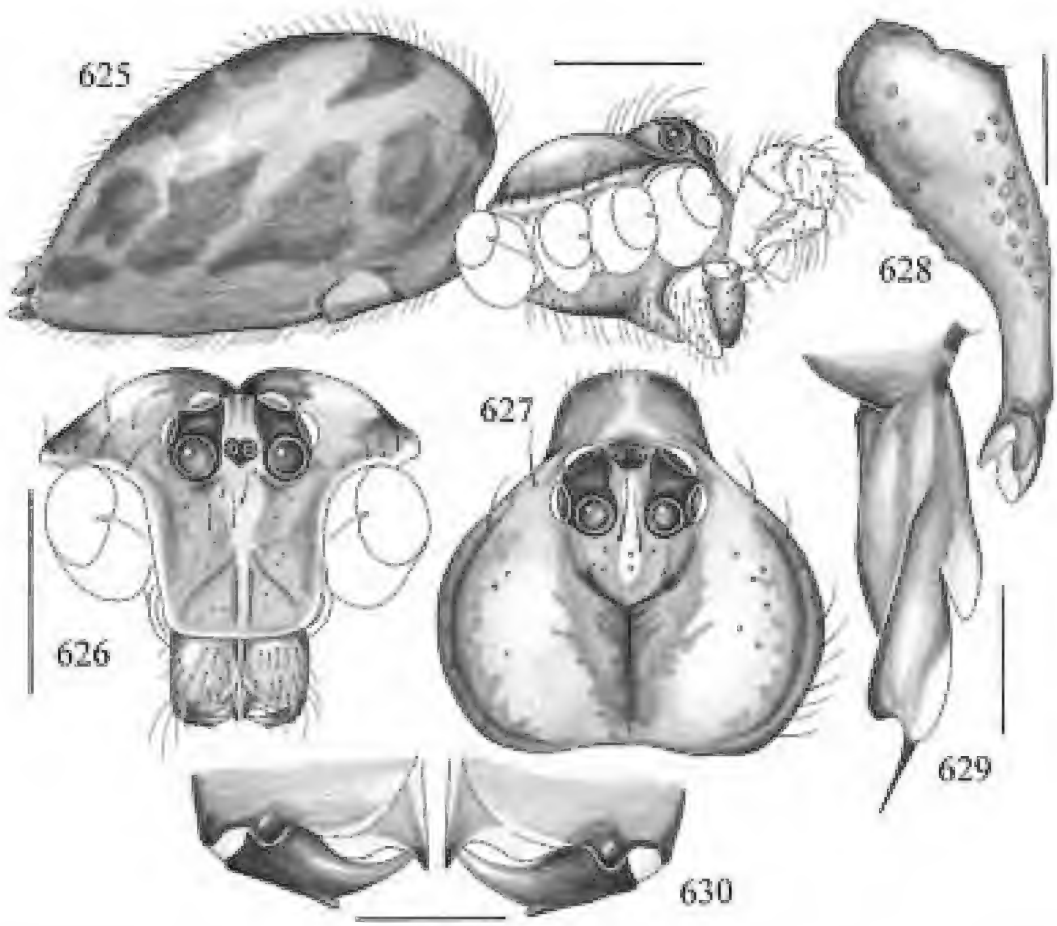
VARIATION: The male from Loja is much lighter (as usual in more recently molted pholcids), and has a tibia 1 length of 4.0.

FEMALE (paratype): Total length 1.9, carapace width 0.8; leg 1 missing. In general very similar to male. Very wide brown epigynum with pair of cuticular pockets on lateral extremes (figs. 637–639; see Notes below).

DISTRIBUTION: Known only from two localities in southern Ecuador. The MUSM has three possibly conspecific males from northern Peru (Piura: Ayabaca), but these are very poorly preserved.

MATERIAL EXAMINED: ECUADOR: *Azuay:* Cuenca: types above, with 2 juveniles; *Loja*: Loja, Mar. 26, 1965 (L. Peña), 1♂ in MCZ.

NOTES: The distances between the tips of the male cheliceral fangs (0.8 mm) and between the pockets in the female epigynum (0.7 mm), together with what is known about copulation in pholcids (review in Huber and Eberhard, 1997), suggest that the male apophyses are inserted into the pockets during copulation.



Figs. 625–630. *Chibchea valle*, n. gen., n. sp., male holotype. **625**. Habitus, lateral view. **626–627**. Prosoma, frontal and dorsal views. **628**. Left procursus, retrolateral view. **629**. Embolar division of left bulb, prolateral view. **630**. Cheliceral fangs, frontal view. Scale lines: 0.5 mm (625–627), 0.1 mm (628–630).

One of the juveniles accompanying the types is a penultimate male, and it seems remarkable that the palps are swollen as usual, but the cheliceral fangs show no sign of the developing apophyses.

Chibchea merida, new species

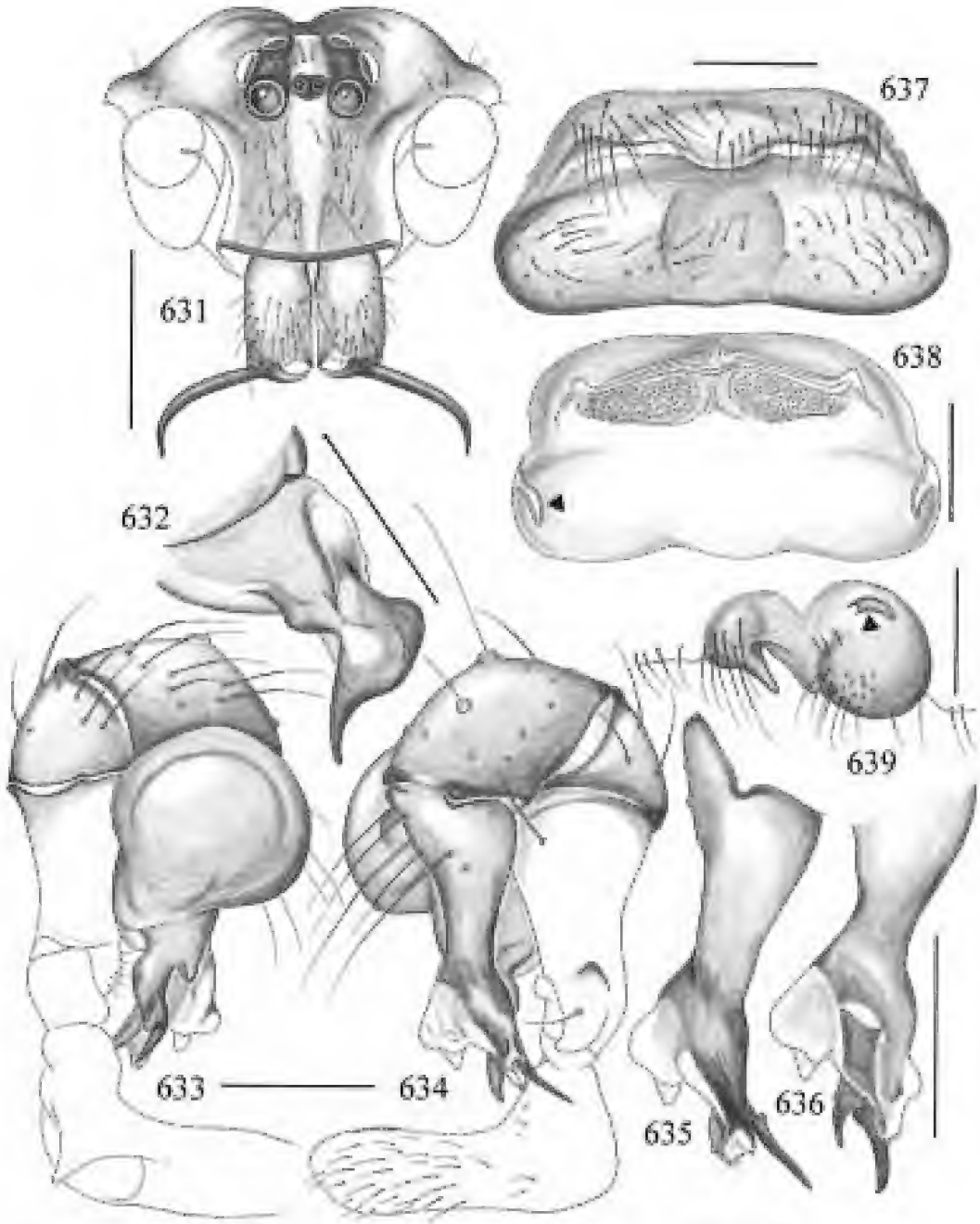
Figures 640–651

TYPE: Male holotype from "coffee forest" at Univ. Los Andes, Mérida, Dept. Mérida, Venezuela; June 22–27, 1989 (S. & J. Peck), in AMNH.

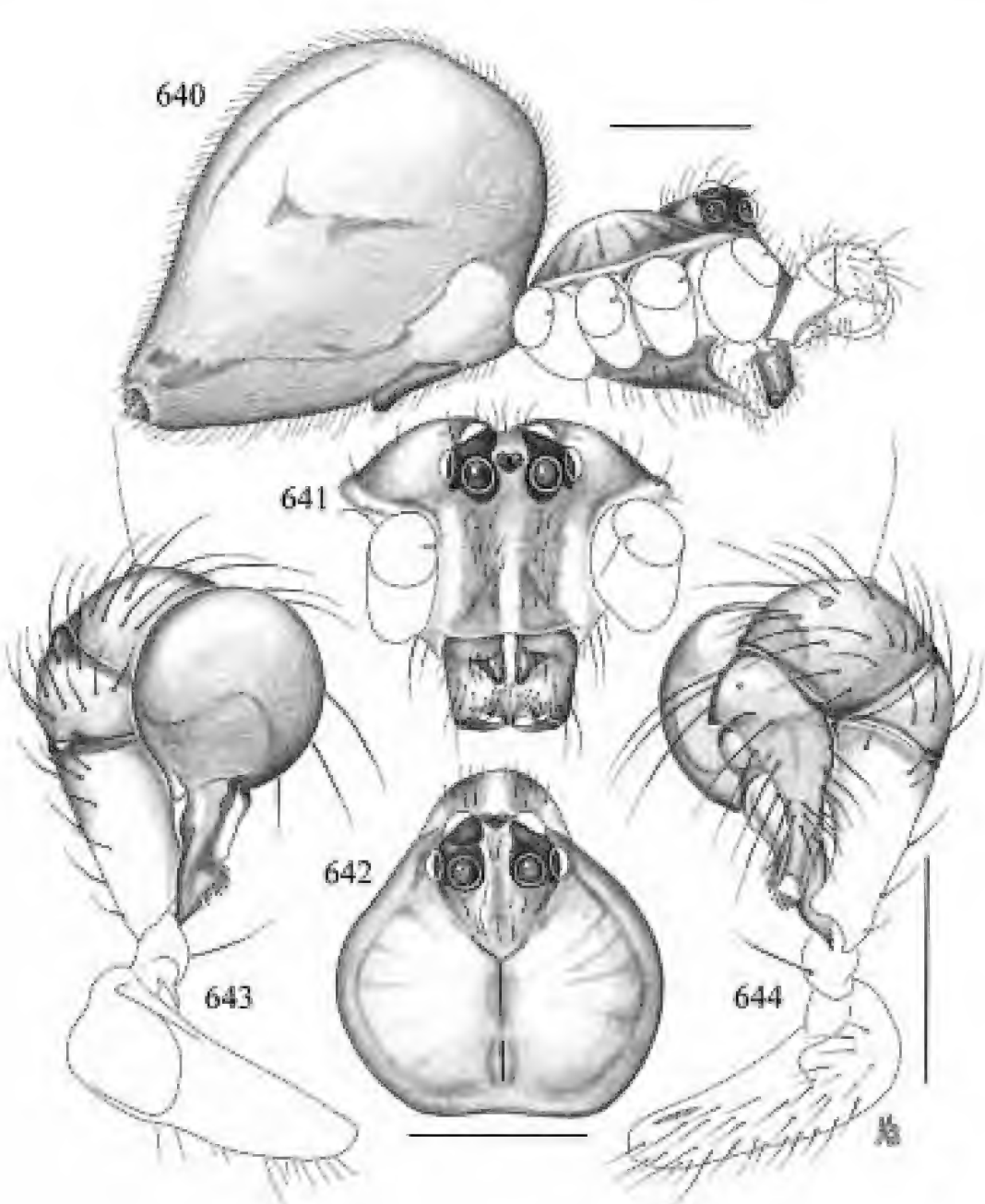
ETYMOLOGY: Named for the Venezuelan state Mérida. The specific name is a noun in apposition.

DIAGNOSIS: Close relative of *C. tunebo*, distinguished by the presence of conspicuous frontal apophyses on the male chelicerae (fig. 648).

MALE (holotype): Total length 2.5, carapace width 0.9; leg 1: 12.7 (2.9+0.4+3.1 +5.3+1.0), tibia 2: 2.1, tibia 3: 1.8, tibia 4: 2.5; tibia 1 l/d: 33. Habitus as in fig. 640; distance PME-ALE about 70% of PME diameter. Prosoma with moderately deep thoracic groove; eight eyes on slightly elevated ocular area (figs. 640–642); carapace light brown, darker laterally and medially, clypeus with pair of darker brown bands (fig. 642); sternum light brown. Chelicerae light brown, with pair of conspicuous apophyses and another pair of hardly visible apophyses just in

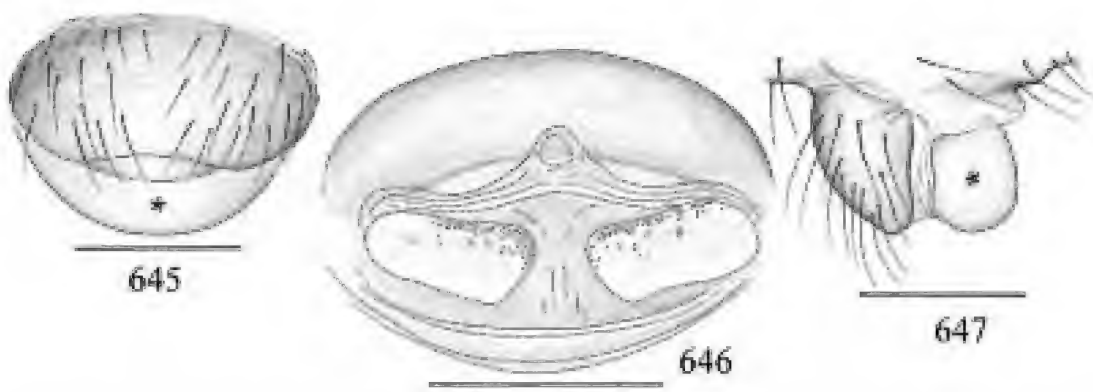


Figs. 631–639. *Chibchea mayna*, n. gen., n. sp. **631**. Male prosoma, frontal view. **632**. Embolar division of left bulb, dorsal view. **633**. Left palp, prolateral view. **634**. Left palp, retrolateral view. **635**. Left procursus, retrolateral view. **636**. Left procursus, dorsal view. **637**. Epigynum, ventral view. **638**. Epigynum, dorsal view. **639**. Epigynum, lateral view (arrows point to lateral pockets in epigynum). Scale lines: 0.5 mm (631), 0.2 mm (632–639).



Figs. 640–644. *Chibchea merida*, n. gen., n. sp., male holotype. **640**. Habitus, lateral view. **641–642**. Prosoma, frontal and dorsal views. **643**. Left palp, prolateral view. **644**. Left palp, retrolateral view. Scale lines: 0.5 mm (640–642), 0.3 mm (643–644).

front of cheliceral laminae; long hairs proximally and short, spinelike hairs distally (fig. 648); fangs unmodified. Palps (figs. 643–644) almost identical to *C. tunebo*, procursus simple (fig. 649), bulbal apophysis with dorsal hairlike projections (figs. 650–651). Legs light brown, without rings; without spines, without curved and vertical hairs; tarsus 1 with ~ 20 pseudosegments (difficult to count!). Opisthosoma tapering into terminal



Figs. 645–647. *Chibchea merida*, n. gen., n. sp. **645**. Epigynum, ventral view, slightly frontal. **646**. Epigynum, dorsal view. **647**. Epigynum, lateral view (asterisks mark plug). Scale lines: 0.2 mm.

spinnerets (fig. 640); greenish-gray, darker dorsally. Genital plate large, brown, trapezoidal; dark band between genital plate and spinnerets, tapering toward spinnerets.

VARIATION: The two other males examined had a monochromous ochre prosoma, distinct dark spots on the opisthosoma dorsally, and were slightly smaller (tibia 1 in both: 2.7).

FEMALE: Very similar to male; tibia 1 in only known specimen: 2.2. Epigynum very simple plate (figs. 645, 647), light brown. Internally, pore plates well visible, resembling those of type species (cf. fig. 624), but pores visible only frontally (fig. 646).

DISTRIBUTION: Known only from Mérida.

MATERIAL EXAMINED: VENEZUELA: *Mérida*: Univ. Los Andes: type above; Andrés Bello, Quebrada Eusebio, 2200 m elev., Jan. 28, 1984 (C. Sobrevila), 1♂ in USNM; Cueva del Pirata nr. Azulita (8°40′N, 71°26′W), Jan. 24, 1984 (J. Coddington), 1♂ 1♀ in USNM.

Chibchea tunebo, new species

Figures 652–655

TYPE: Male holotype from "2nd forest road at Camp Siberia," Pregonero, Dept. Tachira, Venezuela; 1280 m elev., July 10–13, 1989 (S. & J. Peck), in AMNH.

ETYMOLOGY: The specific name is a noun in apposition honoring the Tunebo Indians (see *Priscula tunebo*).

DIAGNOSIS: Close relative of *C. merida*, distinguished by the presence of a deep depression frontally on the male chelicerae (fig. 652; instead of a pair of conspicuous apophyses as in *C. merida*), and the longer legs (femur 1 in male holotypes: 5.0 versus 2.9).

MALE (holotype): Total length 2.3, carapace width 0.9; femur 1: 5.0 (other segments missing), tibia 2: 3.5, tibia 3: 2.8, tibia 4: 3.9. Habitus and coloration almost identical to *C. merida* (cf. figs. 640–642); distance PME-ALE about 60% of PME diameter. Chelicerae only with inconspicuous apophyses in front of cheliceral laminae, pair of deep invaginations and modified hairs (long thick hairs covering invagination and short spine-like hairs more distally: fig. 652); fangs unmodified. Palps almost identical to *C. merida*, procursus simple (fig. 653), bulbal apophysis with transparent, fringed lamina dorsally (figs. 654–655). Legs light brown, without rings; without spines, without curved and vertical hairs. Opisthosoma slightly shrunken, but apparently as in *C. merida;* large black spots dorsally, blackish band ventrally.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

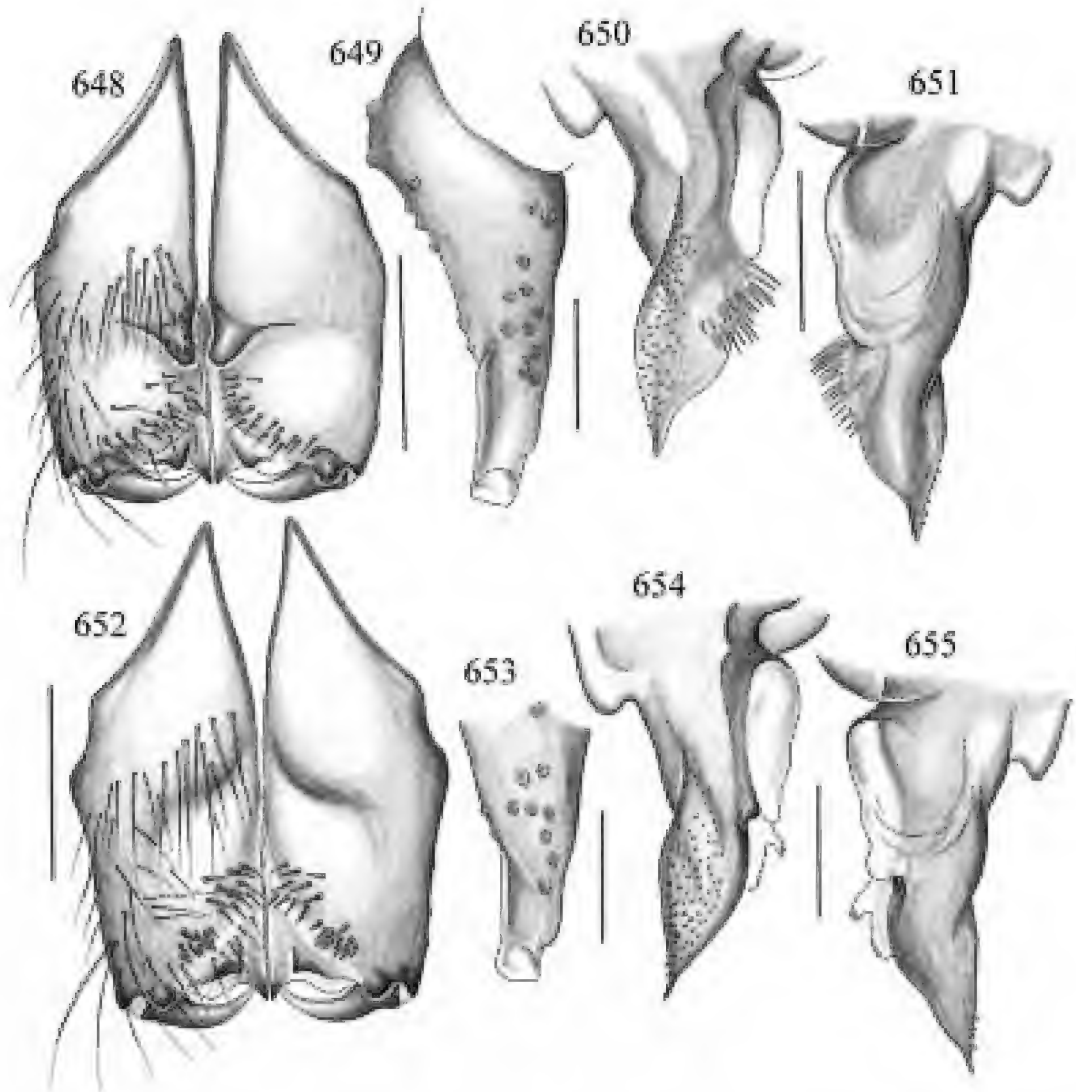
MATERIAL EXAMINED: VENEZUELA: *Tachira*: type above.

Chibchea salta, new species

Figures 656–664

TYPES: Male holotype, 31♂ 7♀ paratypes from 22 km N La Caldera, Salta, Argentina; 1550 m elev., "El Ucumar," subtropical humid forest, malaise, Dec. 2–30, 1987 (S. & J. Peck), in AMNH.

ETYMOLOGY: Named for the Argentinean

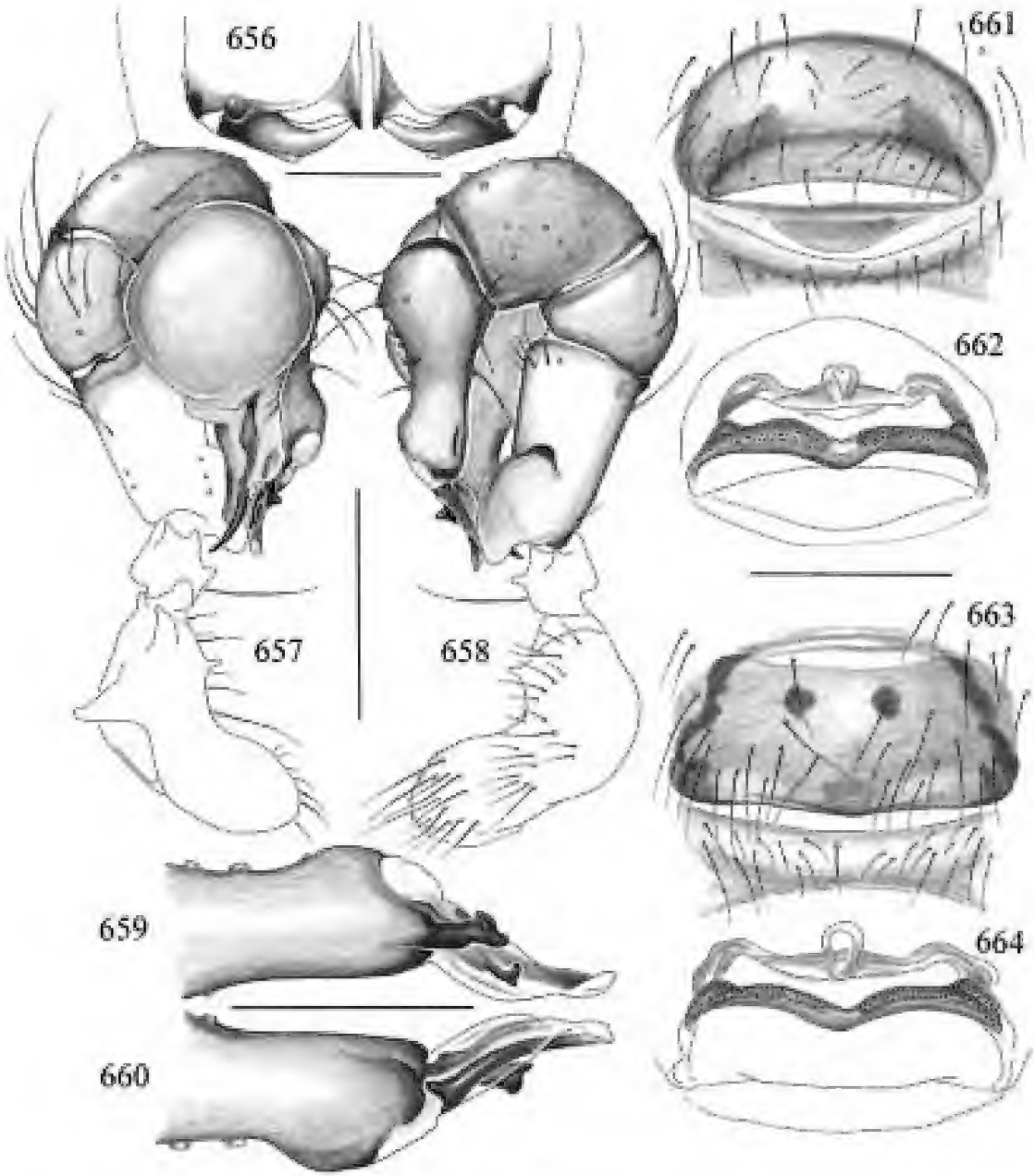


Figs. 648–655. *Chibchea* spp. 648–651. *C. merida*, n. gen., n. sp., male holotype. **648**. Chelicerae, frontal view. **649**. Left cymbium with procursus, retrolateral view. **650–651**. Embolar division of left genital bulb, prolateral (650) and retrolateral (651) views. 652–655. *C. tunebo*, n. gen., n. sp., male holotype. **652**. Chelicerae, frontal view. **653**. Left procursus, retrolateral view. **654–655**. Embolar division of left genital bulb, prolateral (654) and retrolateral (655) views. Scale lines: 0.2 mm (648, 652), 0.1 mm (649–651, 653–655).

state Salta. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from congeners by the relatively complex apophyses on the procursus tip (one of them T-shaped; figs. 659–660).

MALE (holotype): Total length 3.6, carapace width 1.4; leg 1: 14.6 (3.7+0.5+4.2 +4.7+1.5), tibia 2: 3.1, tibia 3: 2.6, tibia 4: 3.6; tibia 1 l/d: 28. Prosoma shape as in *C. mapuche* (cf. figs. 700–701); distance PME-ALE about 90% of PME diameter. Carapace, clypeus, and sternum ochre-brown, ocular area with darker brown margins; chelicerae brown, basal segments unmodified except proximal transverse ridge, fangs with small, semitransparent projections (fig. 656). Palps with distinct narrow coxal apophysis, femur



Figs. 656–664. *Chibchea salta*, n. gen., n. sp. **656**. Distal part of male chelicerae, frontal view. **657**. Left male palp, prolateral view. **658**. Left palp, retrolateral view. **659**. Left procursus, prolateral view. **660**. Left procursus, retrolateral view. **661–662**. Epigynum, ventral (661) and dorsal (662) views. **663–664**. Epigynum of another female from same locality (type locality), ventral (663) and dorsal (664) views. Scale lines: 0.4 mm (657–658, 661–664), 0.2 mm (656, 659–660).

proximally with large characteristic projection, procursus tip with T-shaped apophysis, bulb with simple spinelike apophysis distally (figs. 657–660); tarsal organ exposed. Legs brown, with dark rings on femora (subdistally) and tibiae (proximally and subdistally); curved hairs on legs 1–3; without spines and vertical hairs; retrolateral trichobothrium of tibia 1 at 30%; tarsus 1 with ~ 17 pseudosegments. Opisthosoma shape as in *C. mapuche* (cf. fig. 699), but slightly more rounded posteriorly, grayish with large blackish spots dorsally and posteriorly, genital plate brown, wide and short; gonopore without epiandrous spigots; ALS with only one piriform gland spigot each.

FEMALE (paratypes): Total length 2.5–3.2, tibia 1 (N = 5) 3.1–3.5 ($\bar{x}$ = 3.3). In general very similar to male. Epigynum simple flat plate, brown (figs. 661, 663), in some females with greenish marks; internal genitalia with pair of elongated transverse pore plates (figs. 662, 664).

VARIATION: Tibia 1 in 19 male paratypes: 3.5–4.3 ($\bar{x}$ = 3.8). The external appearance (pigmentation) of the epigynum is quite variable (figs. 661, 663), but internally there seems to be very little variation (figs. 662, 664).

DISTRIBUTION: Known only from Salta Province, Argentina.

MATERIAL EXAMINED: ARGENTINA: *Salta:* 22 km N La Caldera: types above; 17 km N Caldera, 1550 m, Alto(?) de la Sierra, subtropical humid forest, malaise, Dec. 2–30, 1987 (S. & J. Peck), ~ 80♂ 7♀ in AMNH.

Chibchea aberrans (Chamberlin, 1916), new combination

Figures 665–668

Litoporus aberrans Chamberlin, 1916: 226–227, pl. 14: figs. 8–9, pl. 15: figs. 1–3.

TYPE: Male holotype from Urubamba, Dept. Cuzco, Peru; 9500 ft elev., July 1911 (Yale Peruvian Expedition), in MCZ (examined).

DIAGNOSIS: Closely related to *C. araona*; distinguished by the more slender procursus and the shapes of its distal structures (compare figs. 667–668 with 669–670).

MALE (holotype): Total length 3.4, carapace width 1.5; leg 1: 18.3 (5.2+0.6 +5.2+6.0+1.3), tibia 2: 3.5, tibia 3: 2.8, tibia 4: 4.2; tibia 1 l/d: 33. Prosoma shape as in *C. mapuche* (cf. figs. 700–701); carapace ochre with wide brown median band and lateral bands, clypeus with light brown band, sternum ochre, slightly darker toward middle. Chelicerae brown, basal segments unmodified, except proximal transverse ridge (fig. 665), fangs with tiny projections (fig. 666). Palps in general as in *C. salta* (including distinctive apophyses on coxa and femur, and tiny trochanter apophysis, cf. fig. 658), but procursus simpler (figs. 667–668). Legs ochre to light brown, slightly darker brown rings on femora (subdistally) and tibiae (proximally and subdistally); curved hairs on legs 1–3 (femora, tibiae, and metatarsi); apparently without spines and vertical hairs (many hairs missing). Opisthosoma shape as in *C. mapuche* (cf. fig. 699), but slightly more rounded posteriorly, ochre-gray with blackish spots dorsally and posteriorly, genital plate brown.

VARIATION: The second specimen seen was considerably smaller (carapace width 1.0, tibia 1: 2.7) but had apparently indistinguishable genitalia.

FEMALE: Unknown.

DISTRIBUTION: Known only from Cuzco, Peru.

MATERIAL EXAMINED: PERU: *Cuzco:* Urubamba: type above; Road Cuzco to Shintuya, near Huancarane, "1st truck breakdown," Sept. 23, 1987 (J. Coddington), 1♂ in USNM.

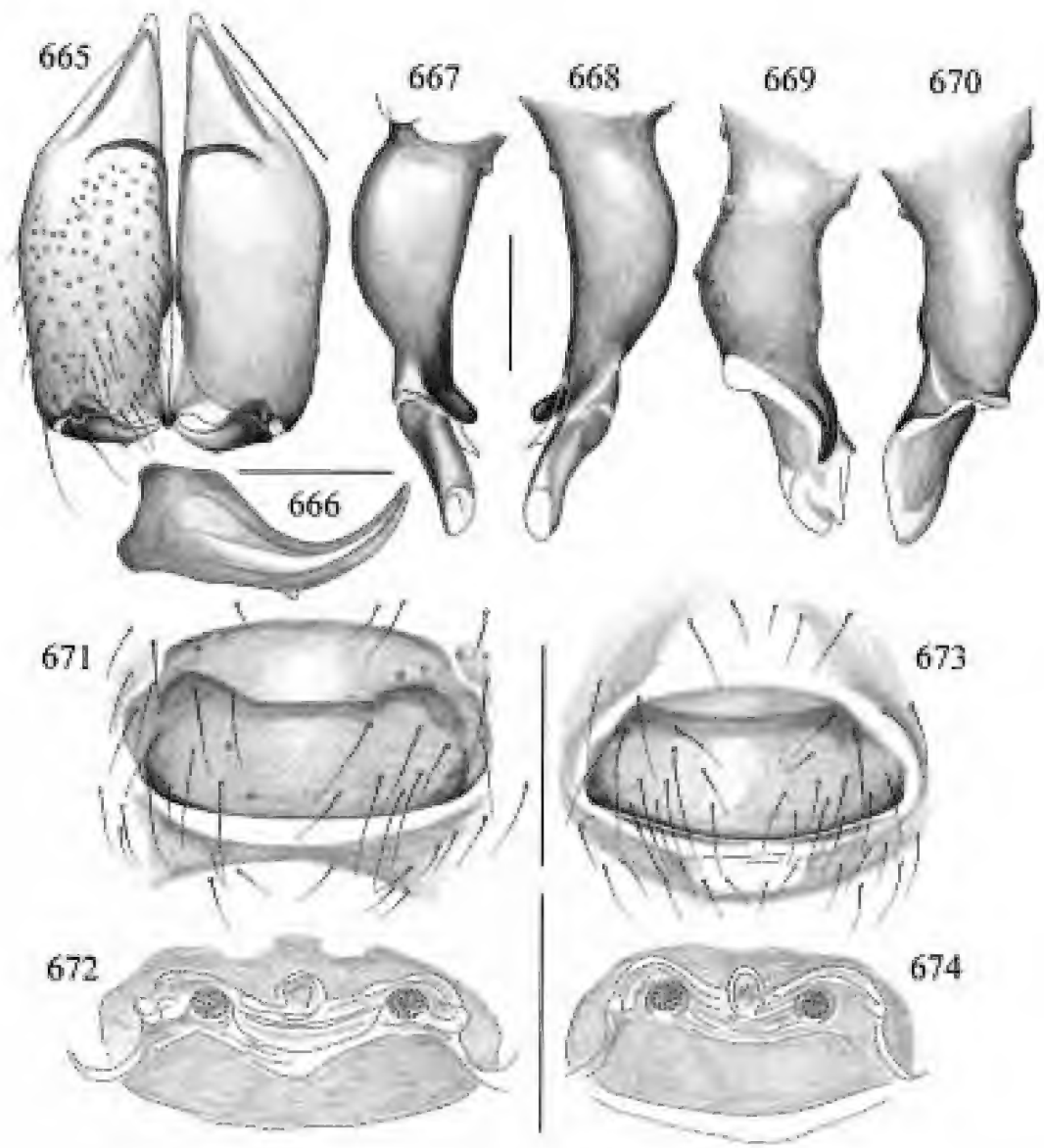
Chibchea araona, new species

Figures 31, 669–674

TYPES: Male holotype, 9♂ 14♀ paratypes from Oruro, Dept. Oruro, Bolivia; 12,500 ft elev., in house, Mar. 24, 1958 (F. Walsh), in AMNH.

ETYMOLOGY: The specific name is a noun in apposition honoring the Araona people who live in the department of La Paz, Bolivia. Numbering more than 20,000 people at the beginning of the century, the tribal population was down to about 60 people by the 1980s.

DIAGNOSIS: Closely related to *C. aberrans*, distinguished by the wider procursus and the shapes of its distal structures (figs. 669–670).



Figs. 665–674. *Chibchea* spp. 665–668. *C. aberrans* (Chamberlin), male holotype. **665**. Chelicerae, frontal view. **666**. Cheliceral fang, frontal view. **667**. Right procursus, prolateral view. **668**. Right procursus, retrolateral view. 669–674. *C. araona*, n. gen., n. sp. **669**. Right procursus, prolateral view. **670**. Right procursus, retrolateral view. **671–672**. Epigynum, ventral (671) and dorsal (672) views. **673–674**. Epigynum of another female from same locality (type locality), ventral (673) and dorsal (674) views. Scale lines: 0.3 mm (665, 671–674), 0.1 mm (666–668).

MALE (holotype): Total length 2.5, carapace width 1.0; leg 1: 12.9 (3.5+0.4+3.7 +4.2+1.1), tibia 2: 2.7, tibia 3: 2.1, tibia 4: 2.9; tibia 1 l/d: 33. Prosoma shape as in *C. mapuche* (cf. figs. 700, 701); distance PME-ALE about 80% of PME diameter. Carapace, clypeus, and sternum light brown; ocular area only slightly darker. Chelicerae brown, basal segments unmodified except basal transverse ridge, fangs with tiny projection (fig. 31). Palps in general as in *C. salta* (cf. figs. 657–658), but procursus simpler (figs.

669–670); tarsal organ exposed. Legs light brown, without rings; with curved hairs on tibiae and metatarsi, without spines and vertical hairs; tarsus 1 with ~ 17 pseudosegments; retrolateral trichobothrium of tibia 1 at 34%. Opisthosoma shape as in *C. mapuche* (cf. fig. 699), but slightly more rounded posteriorly, gray with large blackish spots dorsally and posteriorly, genital plate brown, much wider than long; gonopore without epiandrous spigots; ALS with only one piriform gland spigot each.

FEMALE (type locality): Total length (N = 10) 1.6–2.4 ($\bar{x}$ = 2.1), tibia 1 (N = 10) 2.0–2.9 ($\bar{x}$ = 2.5). Habitus as in male. Epigynum simple flat plate (figs. 671, 673), internal genitalia with pore "plates" apparently forming pair of globular receptacles (figs. 672, 674).

VARIATION: Tibia 1 in 9 males from type locality: 2.7–4.4 ($\bar{x}$ = 3.5). The epigynum is quite variable in external appearance (pigmentation), but apparently much less variable internally (figs. 671–674; cf. *C. salta*). In the specimens from La Paz, the genitalia and chelicerae appear identical, but the legs are significantly shorter: tibia 1 in 5 males: 1.7–1.9; in 3 females: 1.5–1.7.

DISTRIBUTION: Known from western Bolivia (Oruro, La Paz) and northern Chile (Tarapacá).

MATERIAL EXAMINED: BOLIVIA: *Oruro:* Oruro: types above; same locality, same collector: no date, 2♂ 9♀ in AMNH; Oruro city, rock pile, Mar. 16, 1958, 3♂ 3♀ some juveniles in AMNH. The following Bolivian material is tentatively assigned to the species (because of the significantly shorter legs, see above): *La Paz*: La Paz, 12500 ft elev., in house, Jan.–Feb. 1959 (R. Walsh), 3♂ 2♀; same locality, same collector: Mar.–Apr. 1959, 1♂ 3♀ in AMNH; Dec. 1958, 1♀; Valle de La Luna, 15 km S La Paz, badlands (~ 16°40′S, 68°12′W), Sept. 19, 1987 (J. Coddington), 1♂ 1♀ 1 juvenile in USNM. CHILE: *Tarapacá*: Parinacota: 9 km SE Zapahuira (18°21′S, 69°32′W), 3620 m elev., Feb 5, 1994 (N. Platnick, K. Catley, R. Calderón, R. T. Allen), 5♂ 7♀ in AMNH; 2 km S Zapahuira (18°20′S, 69°34′W), 3400 m elev., Feb. 3, 1994 (N. Platnick, K. Catley, R. Calderón, R. T. Allen), 1♂ in AMNH; 6 km S Zapahuira (18°21′S, 69°34′W), 3420 m elev., Feb. 3–4, 1994 (N. Platnick, K. Catley, R. Calderón, R. T. Allen), 12♂ 7♀ in AMNH.

Chibchea uru, new species

Figures 675–684

TYPE: Male holotype from Consuelo, Manú Road km 165, Dept. Cuzco, Peru; litter at rotten logs, Oct. 1, 1982 (L. E. Watrous & G. Mazurek), in FMNH.

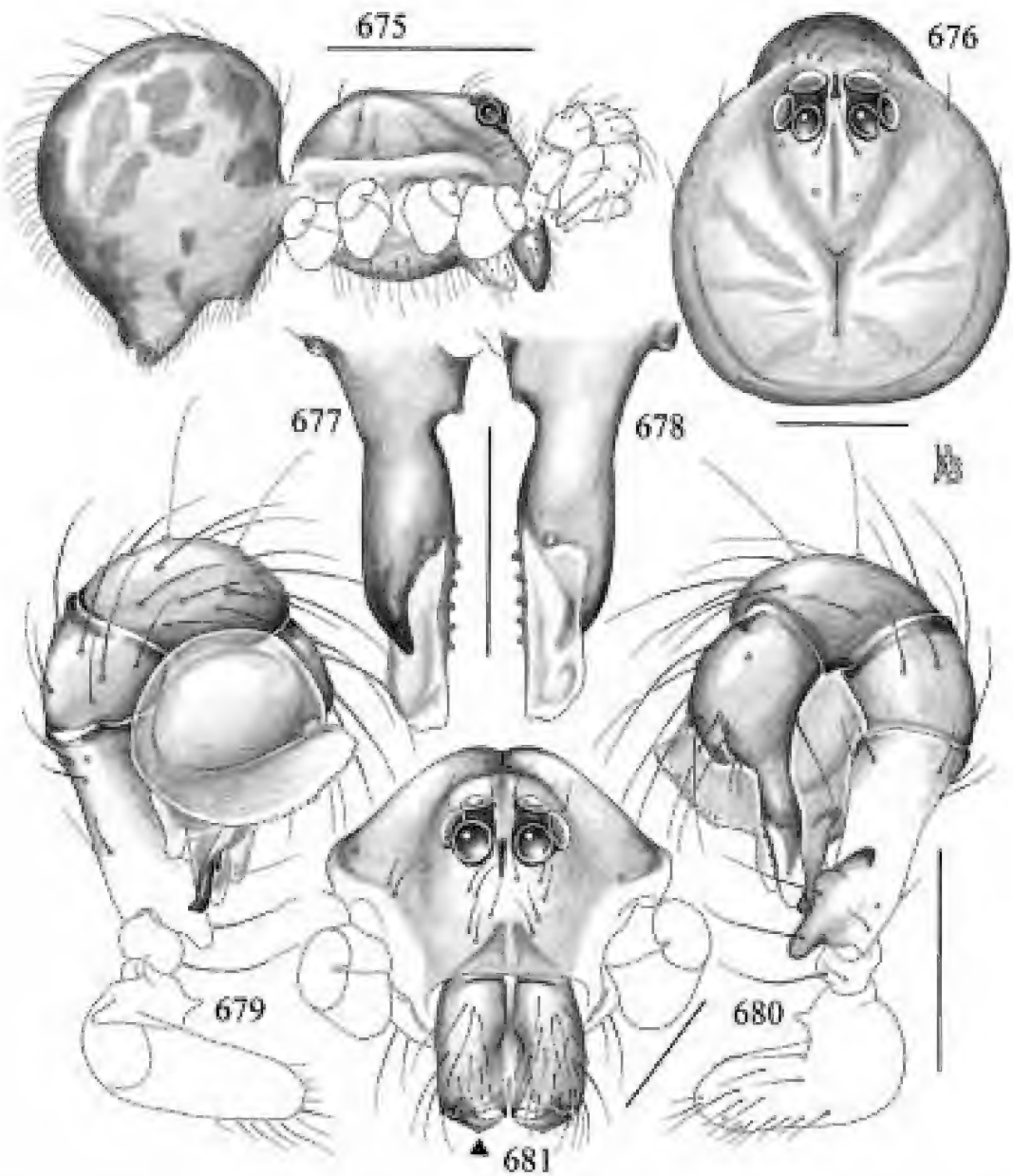
ETYMOLOGY: The species name is a noun in apposition honoring the Uru, a fishing and foraging people who lived on floating rafts on Lake Titicaca in Bolivia. About 20 people who were direct descendents of the Uru were left in the 1980s.

DIAGNOSIS: Easily distinguished from its closest described relatives (*C. araona*, *malkini*, *salta*, *aberrans*) by the absence of AME (fig. 681), the small overall size, and by the shape of bulb, procursus, and epigynum (figs. 677–678, 682–683). The MUSM has at least one very closely related species, also from Cuzco, which differs only minimally with respect to the male palps.

MALE (holotype): Total length 1.12, carapace width 0.48; leg 1: 2.75 (0.73+0.21+0.73+0.71+0.37), tibia 2: 0.53, tibia 3: 0.45, tibia 4: 0.76; tibia 1 l/d: 9. Habitus and prosoma shape as in figs. 675–676; entire prosoma ochre-yellow; carapace with shallow thoracic groove, six eyes in two triads; distance PME-ALE only ~ 30% of PME diameter. Sternum without frontal humps; chelicerae with transverse ridge basally, and tiny, slightly backward-directed apophyses on fangs (arrow in fig. 681). Palps as in figs. 679–680, coxa with distinct narrow apophysis, femur about cylindrical, with large proximal apophysis, procursus simple, serrate dorsally (figs. 677–678), bulb with prominent prolateral outgrowth and several distal elements (figs. 679, 682). Legs monochromous ochre-yellow, without spines, without curved and vertical hairs; retrolateral trichobothrium of leg 1 at 51%; tarsus 1 with ~ 10 pseudosegments. Opisthosoma gray, with slightly darker, large spots dorsally.

VARIATION: Tibia 1 in 5 other males: 0.73–0.79 ($\bar{x}$ = 0.76).

FEMALE: Tibia 1 (N = 6) 0.63–0.77 ($\bar{x}$ = 0.68). In general very similar to male, but

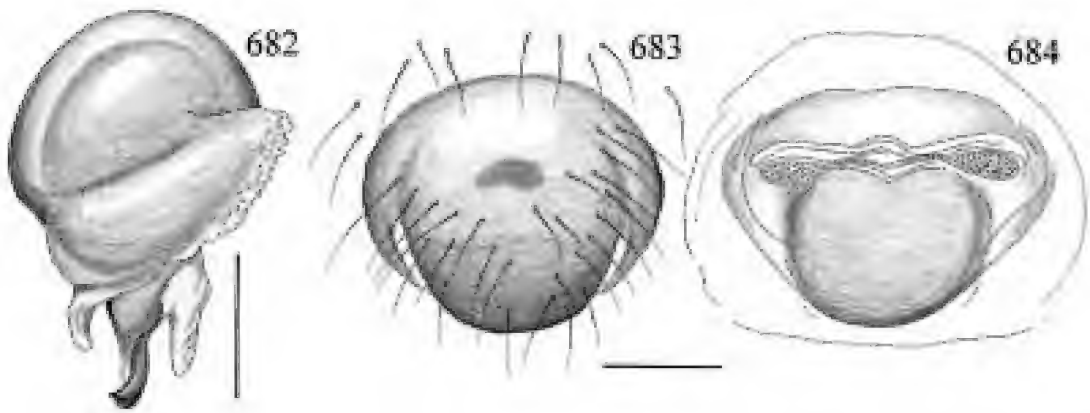


Figs. 675–681. *Chibchea uru*, n. gen., n. sp., male. **675**. Habitus, lateral view. **676**. Prosoma, dorsal view. **677**. Left procursus, prolateral view. **678**. Left procursus, retrolateral view. **679**. Left palp, prolateral view. **680**. Left palp, retrolateral view. **681**. Prosoma, frontal view (arrow points to tiny fang apophysis). Scale lines: 0.5 mm (675), 0.2 mm (676, 679–681), 0.1 mm (677–678).

clypeus not as high. Epigynum simple flat plate (fig. 683); dorsal view as in fig. 684.

DISTRIBUTION: Known from two localities in Dept. Cuzco, Peru.

MATERIAL EXAMINED (all in FMNH): PERU: *Cuzco*: Consuelo: type above; same locality, same collectors, all from leaf litter: Oct. 4, 1982: 2♂; Oct. 10, 1982: 2♀; Oct. 12, 1982: 2♂ 2♀ (3 vials); Oct. 13, 1982: 1♂ 1♀ 1 juvenile; Pillahuata, Manú Road at km 128, moss and litter on xeric slope, Sept. 26, 1982 (L. E. Watrous & G. Mazurek), 1♂;



Figs. 682–684. *Chibchea uru*, n. gen., n. sp. **682**. Left genital bulb, prolateral view. **683**. Epigynum, ventral view. **684**. Epigynum, dorsal view. Scale lines: 0.1 mm.

same locality, same collectors, from leaf litter, Sept. 24, 1982: 1♀.

Chibchea silvae, new species

Figures 685–691

TYPES: Male holotype, 7♂ 8♀ paratypes from Acjanaco-Tres Cruces (13°18′S, 71°40′W), Cuzco, Peru; Mar. 2–3, 1990 (D. Silva), in MUSM.

ETYMOLOGY: Named for the collector of all the material studied.

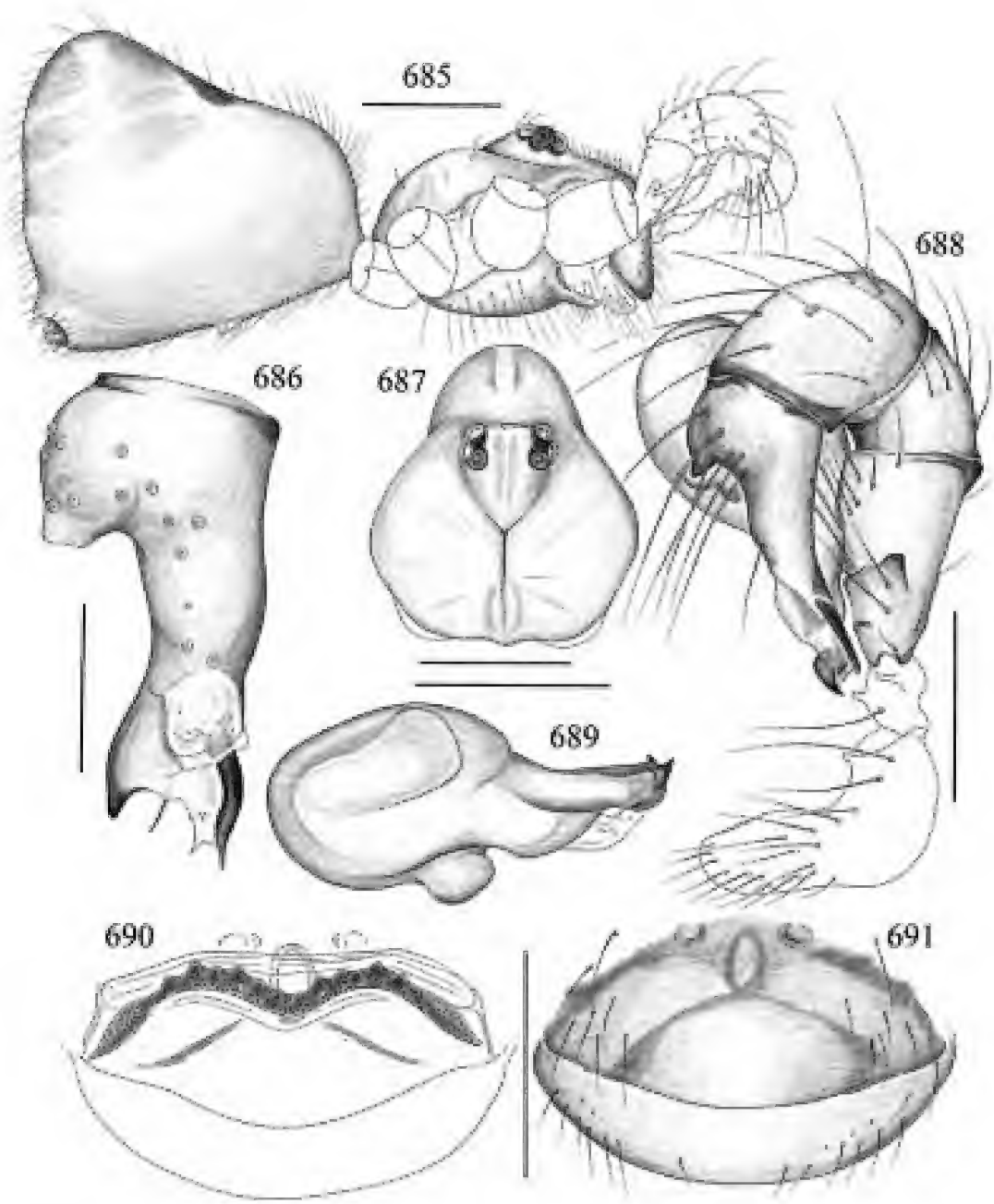
DIAGNOSIS: Easily distinguished from described congeners by the pale coloration, the almost complete reduction of AME, and the shape of procursus and epigynum (figs. 686, 691). The MUSM has a very close, as yet undescribed relative from the same locality, which has shorter legs, dark marks on the prosoma and dark rings on the femora.

MALE (holotype): Total length 2.3, carapace width 1.0; leg 1: 23.1 (5.6+0.4+5.9 +9.3+1.9), tibia 2: 4.0, tibia 3: 3.1, tibia 4: 3.6; tibia 1 l/d: 68. Habitus as in fig. 685; prosoma entirely yellowish-ochre, only dorsally with darker median line in thoracic groove, and light brown mark behind ocular area (fig. 687). Ocular area only slightly elevated, AME rudimentary; distance PME-ALE about 100% of PME diameter. Sternum pale yellowish, without humps; chelicerae pale yellowish, in structure very similar to those in *C. aberrans* (cf. fig. 665); basal segments unmodified except proximal transverse ridge, fangs with small, semitransparent projections. Palps (fig. 688) with distinct narrow coxal apophysis, fingerlike apophysis on trochanter, femur proximally with characteristic retrolateral projection, procursus as in figs. 686, 688, bulb with sclerotized apophysis and transparent membranous element on embolar division (figs. 688–689). Legs yellowish, only on tibiae brown ring distally; without spines; curved hairs on tibiae 1–3, many vertical hairs on all metatarsi, especially proximally on metatarsi 1–3; retrolateral trichobothrium of tibia 1 apparently missing in holotype, in paratype at 10%; tarsus 1 with $>$ 20 pseudosegments (difficult to count proximally). Opisthosoma shape as in fig. 685, pale grayish, dorsally with two small dark marks.

FEMALE (type locality): Tibia 1 (N = 10) 3.9–4.5 ($\bar{x}$ = 4.2). In general very similar to male, but without curved and vertical hairs on legs. Epigynum simple flat plate, with slightly darker arch frontally (fig. 691); internal genitalia with large, undulating pore plates apparently fused medially (fig. 690).

VARIATION: Tibia 1 in 15 males: 4.9–6.0 ($\bar{x}$ = 5.5). Most specimens still have tiny lenses of the AME, but in some there is no pigment left and the lenses are difficult to see. The pattern on the opisthosoma ranges in both sexes from no marks at all to four pairs of large blackish marks (in an apparently freshly molted male).

DISTRIBUTION: Known from Cuzco and Madre de Dios (Peru).



Figs. 685–691. *Chibchea silvae*, n. gen., n. sp. **685**. Male habitus, lateral view. **686**. Left cymbium with procursus, retrolaterodorsal view. **687**. Male prosoma, dorsal view. **688**. Left male palp, retrolateral view. **689**. Left genital bulb, prolaterodorsal view. **690**. Epigynum, dorsal view. **691**. Epigynum, ventral view. Scale lines: 0.5 mm (685, 687), 0.3 mm (686, 688–691).

MATERIAL EXAMINED: PERU: *Cuzco:* Acjanaco-Tres Cruces: types above; same locality, Mar. 1990 (D. Silva), 5♂ in MUSM; same locality, Mar. 12, 1991 (D. Silva), 1♂ 1♀ in MUSM; same locality, July 3, 1991 (D. Silva), 1♂ in MUSM; Wiñayhuaina (~ 13°07′S, 72°34′W), 2700–3100 m elev., Feb. 9–11, 1990 (D. Silva), 2♂ 2♀ in MUSM (assigned tentatively); Parque Nacional Manú, Carretera Paucartambo–Pilcopata, 2750 m elev., Feb. 18, 1990 (D. Silva), 1♂ in MUSM; same locality at 2650 m elev., Feb. 18, 1990 (D. Silva), 2♂ 4♀ in MUSM; same locality at 2150 m elev., Feb. 17, 1990 (D. Silva), 1♂ 1♀ in MUSM. *Madre de Dios*: Zona Reservada Pakitza (11°56′S, 71°17′W), July 4, 1991 (D. Silva), 4♂ 1♀ in MUSM.

Chibchea malkini, new species
Figures 692–698

TYPES: Male holotype, 1♂ 4♀ paratypes from Sacramanto Camp, Ingavi-Coroico Rd., Yungas, Dept. La Paz, Bolivia; July 9–13, 1964 (B. Malkin), in AMNH.

ETYMOLOGY: Named for the collector of the type material.

DIAGNOSIS: Distinguished from close relatives (*C. salta*, *aberrans*, *araona*) by the simple pointed procursus (figs. 693–694), and the longer, much thinner legs.

MALE (holotype): Total length 2.2, carapace width 1.0; leg 1: 22.6 (5.5+0.3+5.6 +9.2+2.0), tibia 2: 3.6, tibia 3: 2.7, tibia 4: 3.3; tibia 1 l/d: 64. Prosoma shape as in *C. mapuche* (cf. figs. 700–701); distance PME-ALE about 90% of PME diameter. Carapace light brown, darker medially and around ocular area, less pigment around AME than in *C. mapuche* (cf. fig. 701), clypeus with pair of darker brown bands, sternum light ochre-brown, darker at margins. Chelicerae brown, basal segments unmodified, except (apparently) basal transverse ridge, fangs with small projection (fig. 696). Palps as in figs. 692, 695, with distinct retrolateral coxal apophysis, femur proximally with large retrolateral protrusion, procursus and bulb distally ending in single pointed tips. Legs light brown, with rings on femora (subdistally) and tibiae (proximally and subdistally), almost all hairs missing; retrolateral trichobothrium of tibia 1 at 13%; tarsus 1 with ~ 25 pseudosegments (distally distinct, proximally difficult to count). Opisthosoma shape as in *C. mapuche* (cf. fig. 699), but slightly more rounded posteriorly, ochre-gray with some blackish spots dorsally and posteriorly.

FEMALE (paratypes): Total length 1.6–1.9; tibia 1: 3.1–3.5. Habitus as in male. Epigynum simple flat plate, brown laterally (fig. 697), internal genitalia with pair of large pore plates (fig. 698).

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BOLIVIA: *La Paz:* types above.

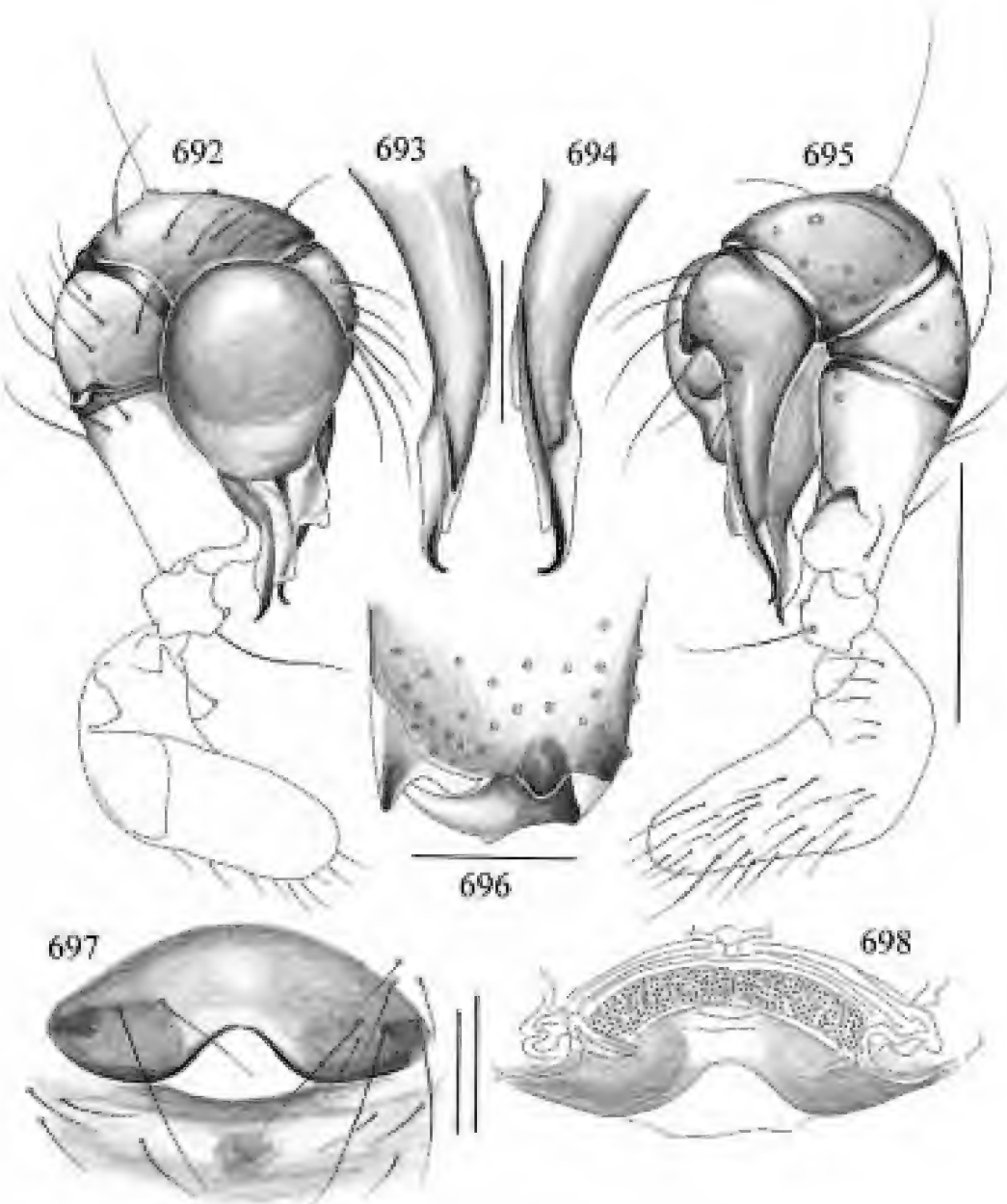
Chibchea mapuche, new species
Figures 699–709

TYPES: Male holotype, 3♂ 6♀ paratypes from Parque Nacional Cerro Nielol, Temuco, Cautin, Chile; 230 m elev., wet forest, Jan. 27, 1985 (N. I. Platnick & O. F. Francke), in AMNH.

ETYMOLOGY: The species name is a noun in apposition honoring the Mapuche, the largest Amerindian tribe in Chile, known for their resiliency to external pressure.

DIAGNOSIS: Close relative of *C. picunche* and *elqui*, distinguished from both by the more proximal position of the cheliceral apophyses (fig. 704), and the tip of the procursus (compare figs. 706, 712, 718); from *C. elqui* also by the single bulbal apophysis (compare figs. 702, 719).

MALE (holotype): Total length 2.8, carapace width 1.2; leg 1: 19.4 (5.2+0.5+5.3 +6.9+1.5), tibia 2: 3.6, tibia 3: 3.1, tibia 4: 3.9; tibia 1 l/d: 47. Habitus as in fig. 699. Carapace with deep thoracic groove (fig. 701), light brown with darker roundish spot and lateral margins (fig. 700), eight eyes on moderately elevated, dark brown ocular area; distance PME-ALE about 60% of PME diameter. Clypeus brown, sternum wide (fig. 705), light brown; chelicerae with one pair of large frontal apophyses (fig. 704), fangs unmodified. Palps as in figs. 702–703, coxa with roundish, indistinct retrolateral apophysis, femur with retrolateral bulge proximally, procursus as in fig. 706, bulb with single distal apophysis (figs. 702–703). Legs light brown, without rings; curved hairs on tibiae and metatarsi (mainly legs 2 and 3), without

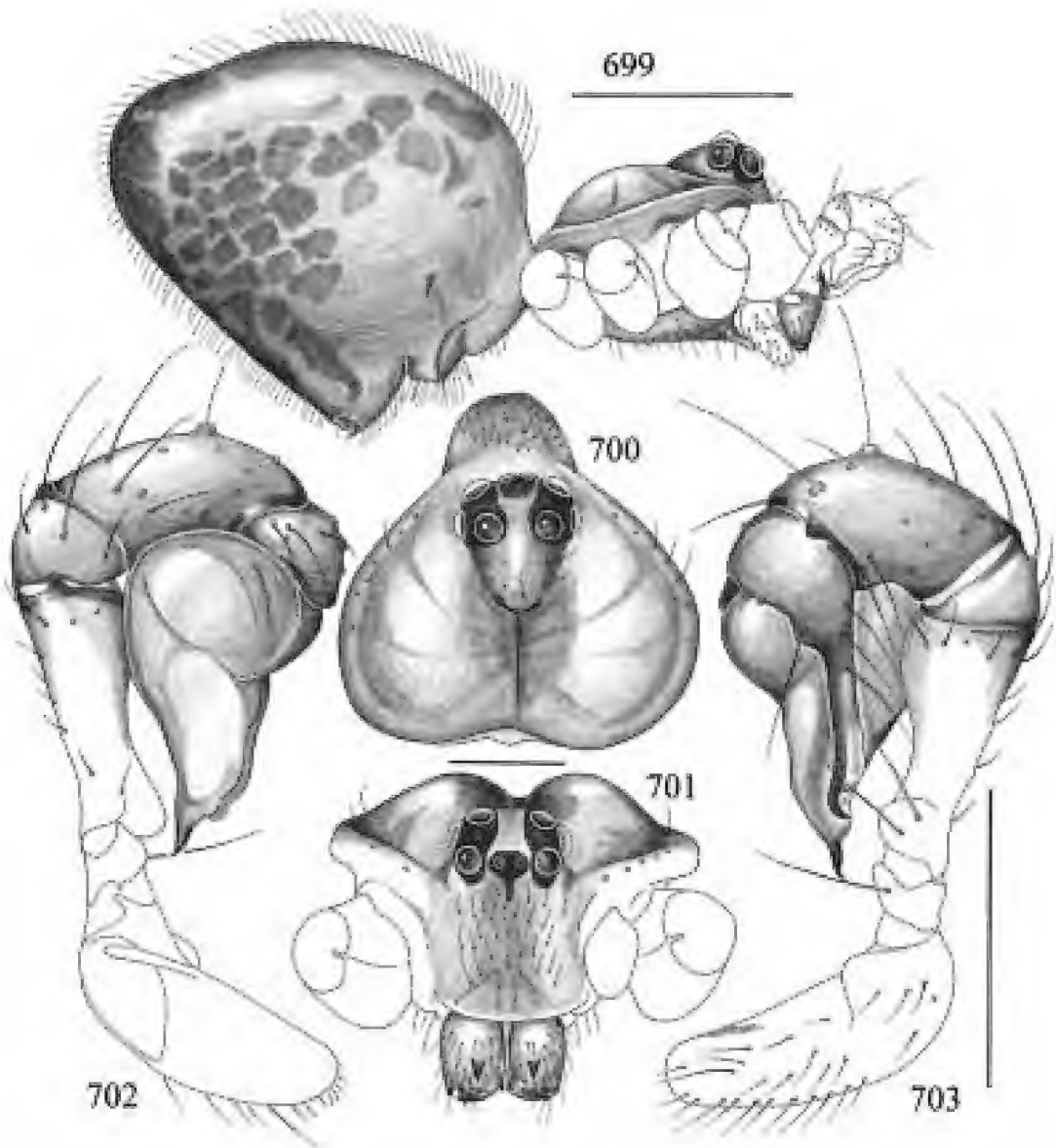


Figs. 692–698. *Chibchea malkini*, n. gen., n. sp. **692**. Left palp, prolateral view. **693**. Left procursus, prolateral view. **694**. Left procursus, retrolateral view. **695**. Left palp, retrolateral view. **696**. Distal part of left chelicera, frontal view. **697**. Epigynum, ventral view. **698**. Epigynum, dorsal view. Scale lines: 0.3 mm (692, 695), 0.1 mm (693–694, 696–698).

spines and vertical hairs; retrolateral trichobothrium of tibia 1 at 18%; tarsus 1 with ~ 22 pseudosegments. Opisthosoma ochre-gray, many large blackish spots dorsally and posteriorly (fig. 699).

VARIATION: Tibia 1 in 5 males: 4.9–5.6 ($\bar{x}$ = 5.2). In the material from Quintero, Valparaiso, the prosoma is significantly smaller, but the genitalia seem to be identical.

FEMALE: Total length (N = 11) 2.0–3.3; tibia 1 (N = 12) 3.6–4.5 ($\bar{x}$ = 4.1). In general very similar to male. Epigynum as in figs.

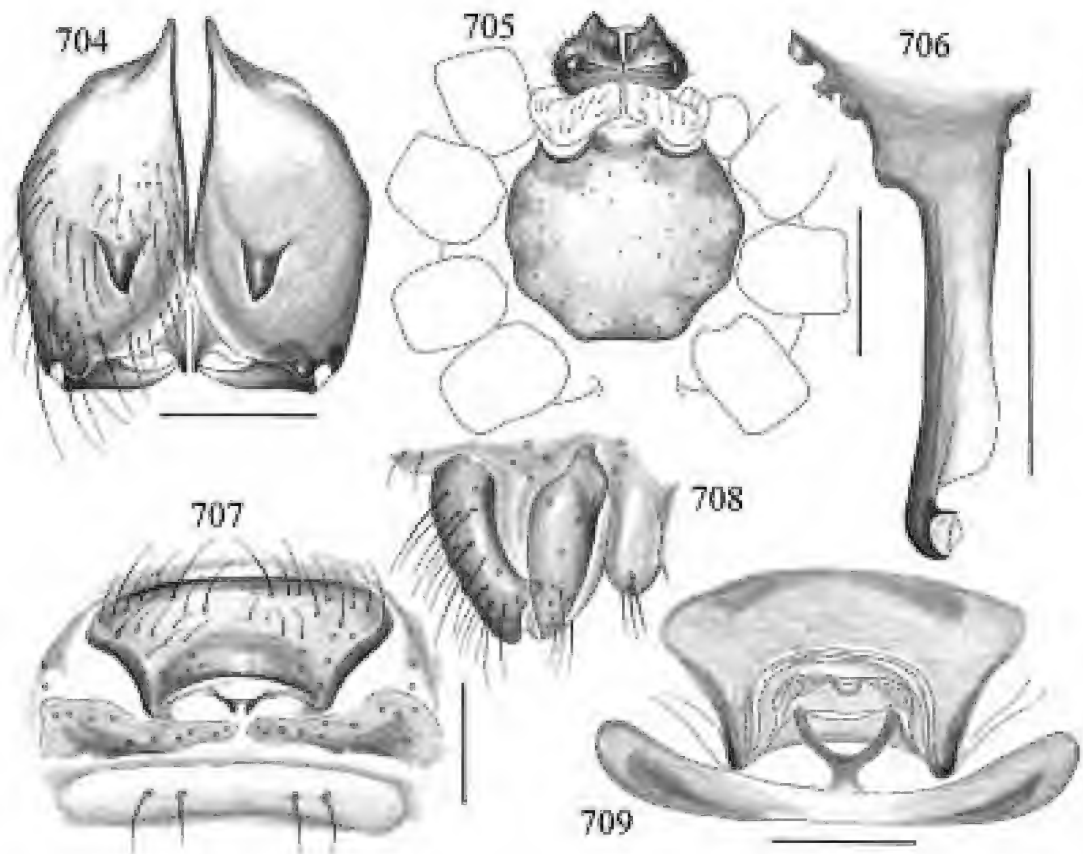


Figs. 699–703. *Chibchea mapuche*, n. gen., n. sp., male. **699**. Habitus, lateral view. **700–701**. Prosoma, dorsal and frontal views. **702**. Left palp, prolateral view. **703**. Left palp, retrolateral view. Scale lines: 1.0 mm (699), 0.4 mm (700–703).

707–708; dorsal view as in fig. 709, pore plates very difficult to see.

DISTRIBUTION: Known from the Chilean provinces Cautin, Valparaiso, Concepción, Osorno, and the Juan Fernandez Islands (~ 600 km off Valparaiso).

MATERIAL EXAMINED: CHILE: *Cautin:* Parque Nacional Cerro Nielol, Temuco: types above; *Valparaiso*: Quintero, pitfalls in relict forest, Oct. 2, 1968 (R. Calderón G.), 1♂ 2♀ in AMNH; same locality and collector: Mar. 26, 1968, 1♂ in AMNH; Aug. 12, 1968, 3♂ in AMNH; "Osorno," Aug. 1977 (A. Tobar), 1♂ 4♀ in AMNH; *Concepción:* "mouth of Bío Bío river," June 8, 1980 (I. Barra), 1♂ 2♀ in AMNH; *Juan Fernandez Islands*: Robinson Crusoe Island: Plazoleta El Yunque, pans near Plazoleta campside, Jan.



Figs. 704–709. *Chibchea mapuche*, n. gen., n. sp. **704**. Male chelicerae, frontal view. **705**. Male prosoma, ventral view. **706**. Left procursus, retrolateral view. **707–708**. Epigynum, ventral and lateral views. **709**. Epigynum, dorsal view. Scale lines: 0.5 mm (705), 0.2 mm (704, 706–709).

23–29, 1992 (S. A. Marshall), 1♂ 2♀ in AMNH.

Chibchea picunche, new species

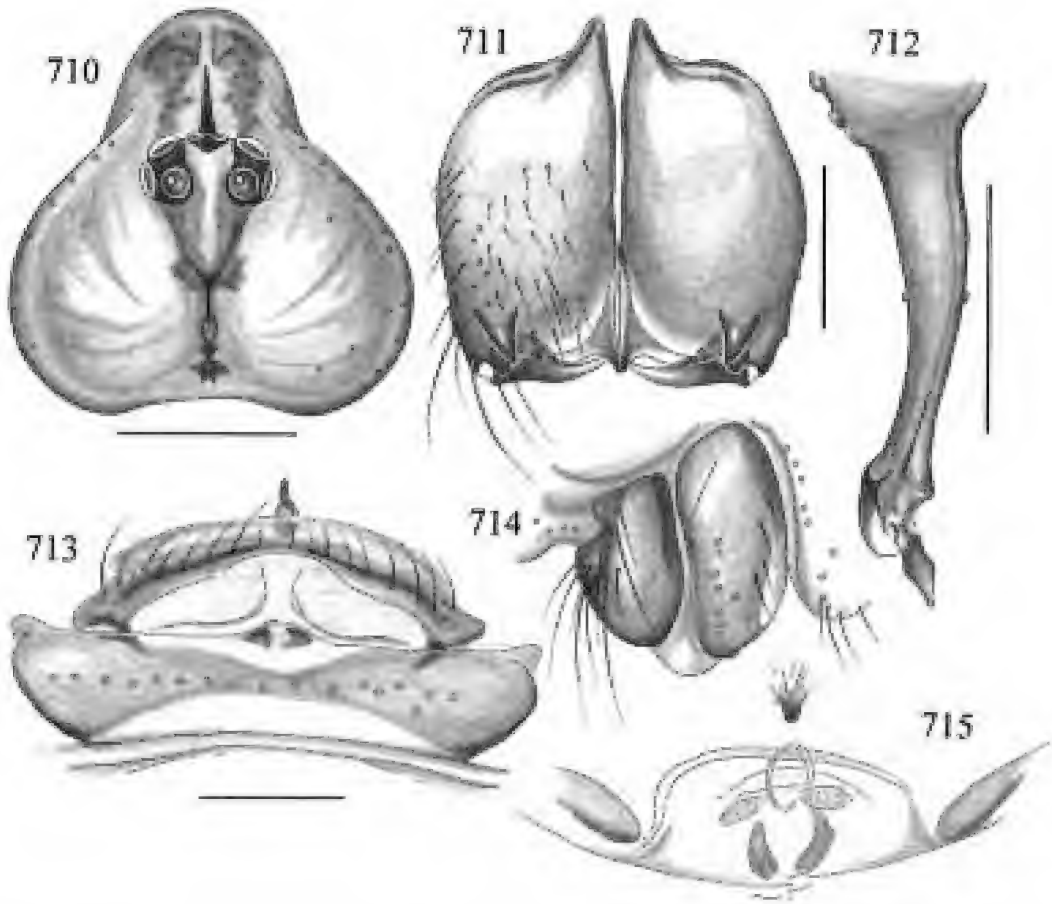
Figures 80, 190, 710–715

TYPES: Male holotype, 4♂ 9♀ paratypes from 5 km N Los Vilos, Coquimbo, Chile; 3 m elev., under succulent rock cover along cove, Jan. 5, 1985 (N. I. Platnick & O. F. Francke), in AMNH.

ETYMOLOGY: The specific name is a noun in apposition honoring the Picunche, who were the northernmost of the Araucanian Indian people of Chile. Enslaved by the Spaniards their population rapidly declined and had mostly disappeared by the early 17th century.

DIAGNOSIS: Close relative of *C. mapuche* and *elqui*, distinguished from the first by the more distal position of the cheliceral apophyses (fig. 711) and the shorter anterior plate of the epigynum (fig. 714); from *C. elqui* by the single bulbal apophysis; distinguished from both also by the shape of the procursus (fig. 712).

MALE (holotype): Total length 2.7, carapace width 1.2; leg 1: 16.5 (4.4+0.5+4.4 +5.9+1.3), tibia 2: 2.7, tibia 3: 2.0, tibia 4: 2.5; tibia 1 l/d: 41. Habitus and prosoma shape as in *C. mapuche* (cf. figs. 699–701); distance PME-ALE about 60% of PME diameter. Carapace light brown with darker median stripe and faint lateral spots (fig. 710), black line pointing down from AME. Sternum wide, light brown; chelicerae with pair of large frontal apophyses distally (fig. 711; small additional apophysis absent in holotype), fangs unmodified. Palps generally as



Figs. 710–715. *Chibchea picunche*, n. gen., n. sp. **710**. Male prosoma, dorsal view, slightly frontal. **711**. Male chelicerae, frontal view. **712**. Left procursus, retrolateral view. **713–714**. Epigynum, ventral and lateral views. **715**. Epigynum, dorsal view. Scale lines: 0.5 mm (710), 0.2 mm (711–715).

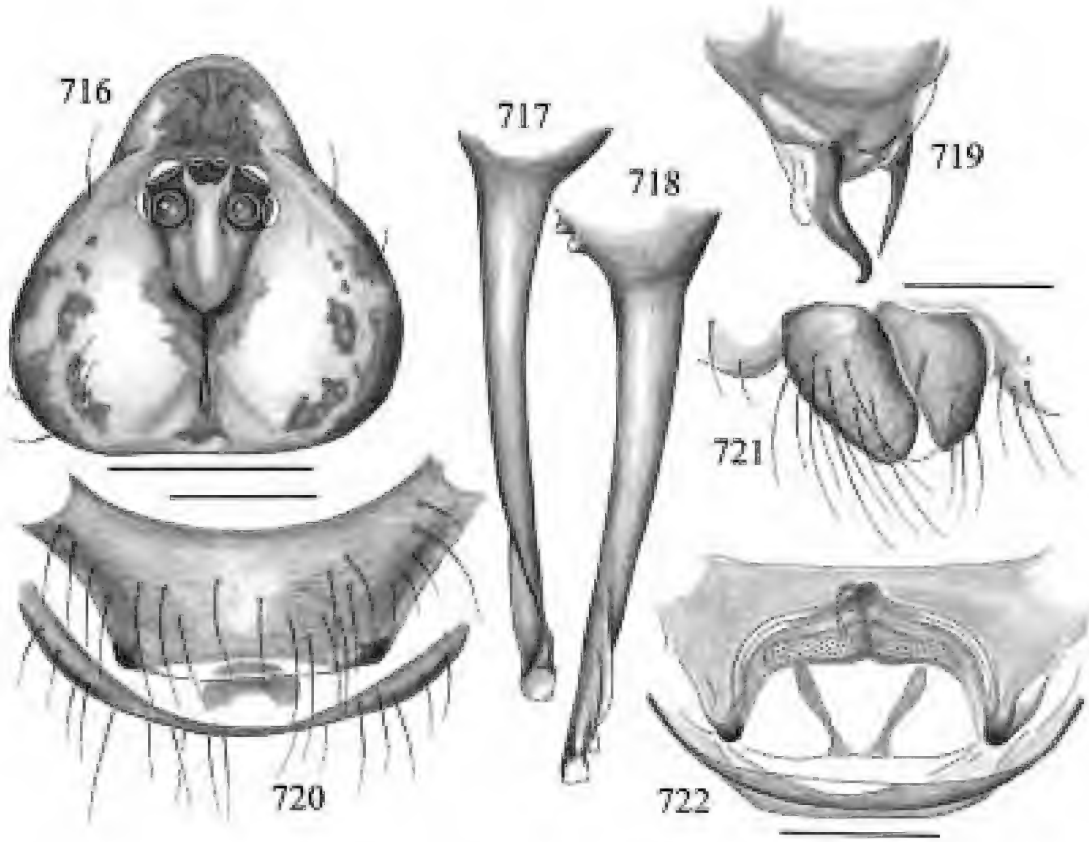
in *C. mapuche*, procursus distinctive (fig. 712); tarsal organ exposed (cf. female: fig. 80). Legs light brown, without rings; femur 2 thicker than others; curved hairs on tibiae and metatarsi (mainly legs 2 and 3), without spines and vertical hairs; retrolateral trichobothrium of tibia 1 at 19%; tarsus 1 with ~ 24 pseudosegments. Opisthosoma grayish, with large blackish spots dorsally and posteriorly; gonopore without epiandrous spigots; ALS with only one piriform gland spigot each (cf. female: fig. 190).

VARIATION: Tibia 1 in 8 males: 3.5–4.2 ($\bar{x}$ = 4.0). In some males there is another pair of very small apophyses present on the chelicerae, as illustrated in fig. 711.

FEMALE: Total length (N = 10) 1.9–3.2; tibia 1 (N = 28) 2.9–4.0 ($\bar{x}$ = 3.5). In general very similar to male, but distinct, dark rings on femora (subdistally) and tibiae (subproximally and subdistally). Epigynum as in figs. 713–714; dorsal view as in fig. 715.

DISTRIBUTION: Known from the Chilean provinces Coquimbo, Valparaiso, and Aconcagua.

MATERIAL EXAMINED: CHILE: *Coquimbo:* 5 km N Los Vilos: types above, and 2 juveniles; same data: 3♂ 6♀ 2 juveniles in AMNH; 19 km N Los Vilos, Rt 5, km 244, elev. 5 m, Nov. 9, 1993 (N. I. Platnick, K. Catley, M. Ramirez, R. T. Allen), 1♂ in AMNH; *Valparaiso*: Petorca, Los Molles, Rt 5, km 188, elev. 10 m, Nov. 9, 1993 (N. I. Platnick, K. Catley, M. Ramirez, R. T. Allen), 1♂ 3♀ 1 juvenile in AMNH; *Aconcagua*: Los Molles, 2 m elev., under succulent



Figs. 716–722. *Chibchea elqui*, n. gen., n. sp. **716**. Male prosoma, dorsal view. **717**. Left procursus, prolateral view. **718**. Left procursus, retrolateral view. **719**. Embolar division of left bulb, prolateral view. **720**. Epigynum, ventral view, slightly frontal. **721**. Epigynum, lateral view. **722**. Epigynum, dorsal view. Scale lines: 0.5 mm (716), 0.2 mm (720–722).

rock cover along coast, Jan. 9, 1985 (N. I. Platnick & O. F. Francke), 2♂ ~ 15♀ some juveniles in AMNH.

Chibchea elqui, new species

Figures 716–722

TYPES: Male holotype, 2♂ 2♀ paratypes from 79 km N La Serena (Rt 5, km 553), Elqui, Coquimbo, Chile; 300 m elev., Oct. 15, 1992 (N. I. Platnick, P. Goloboff, K. Catley), in AMNH.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Close relative of *C. picuncheand mapuche*, distinguished by the straight and simple procursus (figs. 717–718), and the two bulbal apophyses (fig. 719).

MALE (holotype): Total length 2.4, carapace width 0.9; leg 1: 12.8 (3.6+0.3+3.7 +4.0+1.2), tibia 2: 2.9, tibia 3: 2.5, tibia 4: 3.3; tibia 1 l/d: 39. Prosoma shape as in *C. mapuche* (cf. figs. 700–701); carapace and ocular area ochre to light brown, with dark brown pattern of spots (fig. 716); short black line running down from between AME; distance PME-ALE about 60% of PME diameter. Clypeus light brown, sternum brown with numerous lighter spots; chelicerae brown, with black apophyses as in *C. picunche* (cf. fig. 711). Palps in general as in *C. mapuche*, but procursus straight and long, with simple tip (figs. 717–718), and bulb with pair of apophyses (fig. 719). Legs light brown with dark rings on femora (subdistally) and tibiae (proximally and subdistally); femora 2 stronger than others; almost all hairs missing; retrolateral trichobothrium of tibia 1 at 21%; tarsus 1 with ~ 15 pseudo-

segments. Opisthosoma greenish-gray with dark spots, shape as in *C. mapuche* (cf. fig. 699) but projecting farther back over spinnerets.

VARIATION: Tibia 1 in other males: 3.7, 4.1.

FEMALE (paratype): Total length 2.5; tibia 1: 3.6. Very similar to male. Epigynum as in figs. 720–721, brown; dorsal view as in fig. 722.

DISTRIBUTION: Known from the Chilean provinces Coquimbo and Santiago.

MATERIAL EXAMINED: CHILE: *Coquimbo:* Elqui: types above. *Santiago*: Parellones, Sept. 13, 1966 (L. Peña), 1♂ in MCZ.

Chibchea mateo, new species

Figures 723–731

TYPES: Male holotype, 2♂ 1♀ paratypes from W edge San Mateo, Dept. Lima, Peru; eucalyptus forest, under rocks, 3100 m elev., Mar. 27, 1988 (Coyle, Bennett, Palmer, Smith), in AMNH; 2♂ 1♀ paratypes, same collection data, in MCZ.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from congeners by the rounded dorsal apophysis on the procursus (figs. 725–726).

MALE (holotype): Total length 1.7, carapace width 0.9; leg 1: 14.1 (3.7+0.3+3.7 +5.1+1.3), tibia 2: 2.5, tibia 3: 2.0, tibia 4: 2.3; tibia 1 l/d: 51. Prosoma shape as in *C. mapuche* (cf. figs. 700–701), but ALE slightly more distant from AME (fig. 723); distance PME-ALE about 70% of PME diameter. Carapace orange-ochre, darker medially; short black line going down from between AME; clypeus and sternum orange-ochre; chelicerae light brown, with pair of distal apophyses (fig. 724). Palps (figs. 727–729) with distinct retrolateral coxal apophysis, femur proximally with rounded retrolateral protrusion and distally with distinct ventral apophysis, procursus dorsally with black subdistal apophysis (figs. 725–726), bulb simple, with distal spine (fig. 727). Legs with dark rings on femora (medially and subdistally) and tibiae (subproximally, medially and subdistally); curved hairs on legs 1–3; without spines and vertical hairs; retrolateral trichobothrium of tibia 1 at 10%; tarsus 1 with ~ 15 pseudosegments. Opisthosoma shape as in *C. mapuche* (cf. fig. 699), dark greenish-gray with small white and large black spots.

VARIATION: While tibia 1 length is similar in all paratypes (3.6–3.9), one male has a significantly larger prosoma (width 1.2). The males from San Martín (see below) are slightly smaller (tibia 1: 3.2–3.5), but the palps do not differ in size, and the procursus tip is only minimally different. These males have some darker spots proximally on the femora, which are almost invisible in the type specimens.

FEMALE (paratype): Carapace width 1.1; tibia 1: 4.5. Epigynum very simple flat plate, brown with two whitish spots (fig. 730); internal genitalia with pair of elongated pore plates (fig. 731).

DISTRIBUTION: Known from central Peru (Lima, San Martín).

MATERIAL EXAMINED: PERU: *Lima*: San Mateo: types above; *San Martín*: Parque Nacional Abiseo, Pampa del Cuy, 3550 m elev., "entre rocas," Mar. 1, 1988 (D. Silva "et al."), 6♂ in MUSM.

Chibchea abiseo, new species

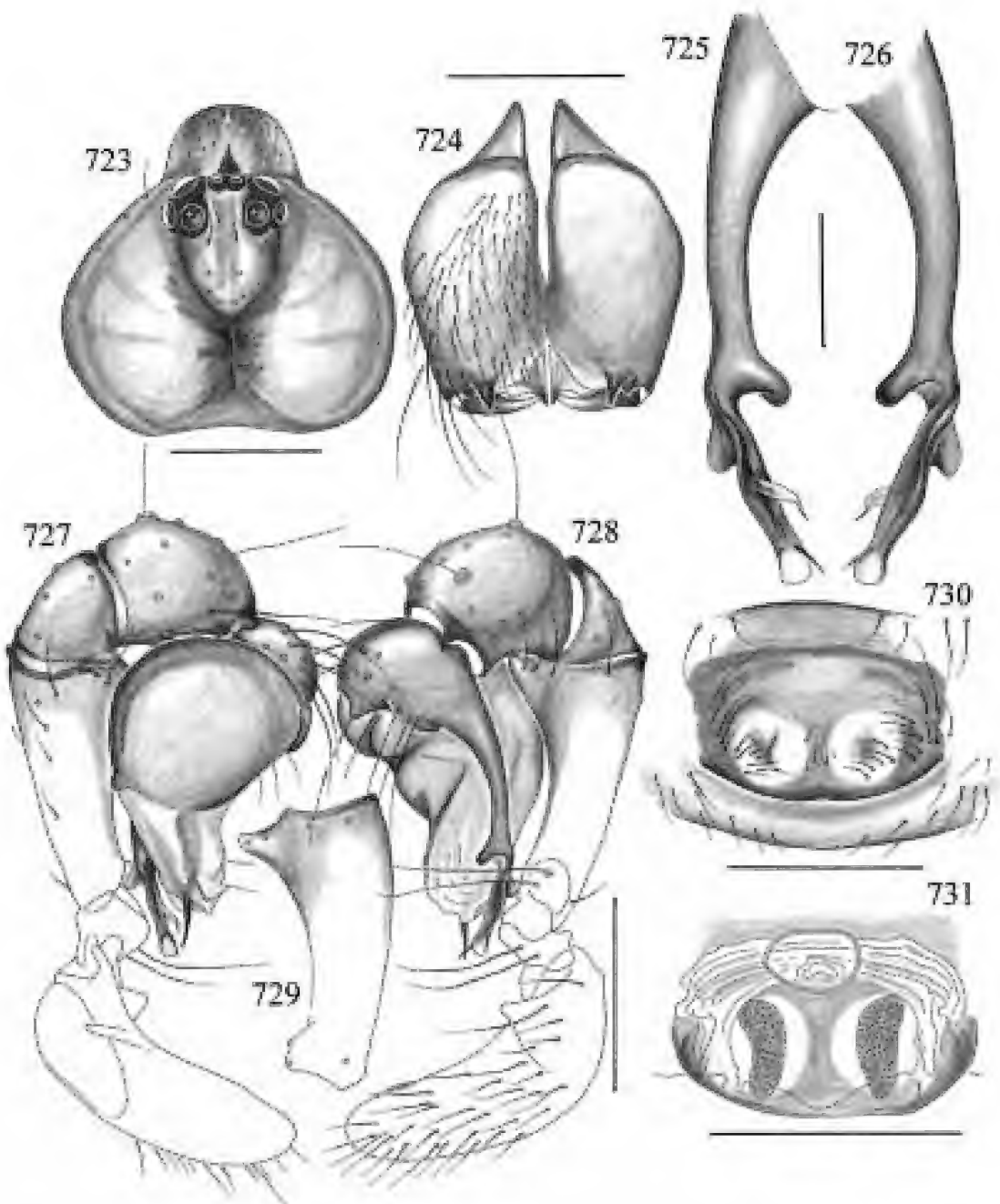
Figures 732–737

TYPES: Male holotype, 4♂ 11♀ paratypes from Parque Nacional Abiseo, Pampa del Cuy, Dept. San Martín, Peru; 3550 m elev., Mar. 10, 1988 (D. Silva), in MUSM.

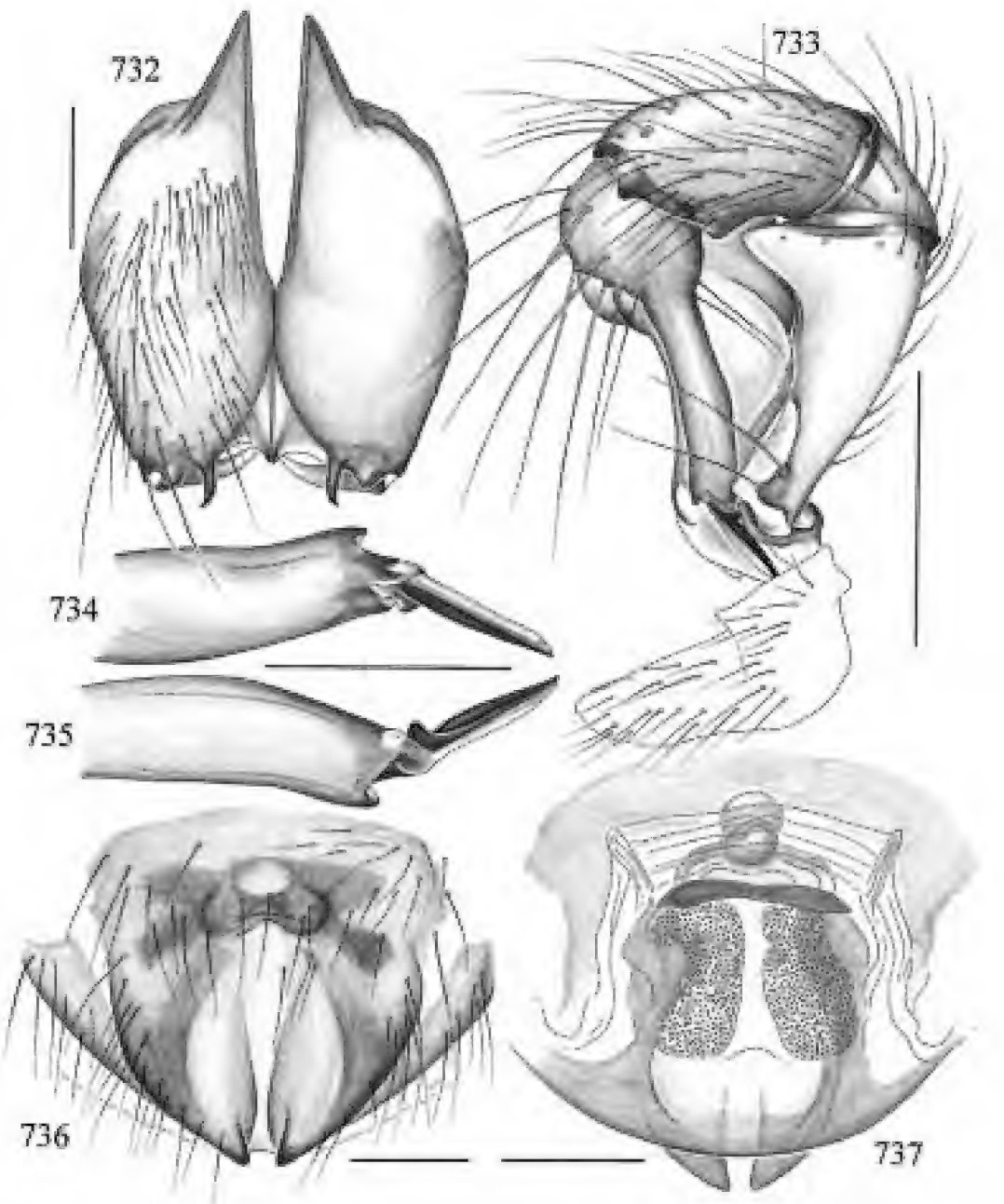
ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Closely related to *C. mateo*, distinguished by the shape of the male cheliceral apophyses (fig. 732), the shape of the procursus (figs. 734–735), and the epigynum with the pair of posterior apophyses (fig. 736).

MALE (holotype): Total length 2.7, carapace width 1.3; leg 1: 19.3 (4.9+0.5+5.0 +6.8+2.1), tibia 2: 3.3, tibia 3: 2.5, tibia 4: 3.1; tibia 1 l/d: 44. Prosoma shape and eye pattern as in *C. mateo* and *mapuche* (cf. figs. 699, 723); distance PME-ALE about 70% of PME diameter. Carapace light brown, darker medially; ocular area and clypeus brown; sternum light brown, without humps; chelicerae brown, with pair of distal apophyses overhanging fangs (fig. 732). Palps as in fig.



Figs. 723–731. *Chibchea mateo*, n. gen., n. sp. **723**. Male prosoma, dorsal view. **724**. Male chelicerae, frontal view. **725**. Left procursus, prolateral view. **726**. Left procursus, retrolateral view. **727**. Left palp, prolateral view. **728**. Left palp, retrolateral view. **729**. Left palpal femur, retrolateral view. **730**. Epigynum, ventral view. **731**. Epigynum, dorsal view. Scale lines: 0.5 mm (723), 0.3 mm (724, 727–731), 0.1 mm (725–726).



Figs. 732–737. *Chibchea abiseo*, n. gen., n. sp. **732**. Male chelicerae, frontal view. **733**. Left palp, retrolateral view. **734**. Tip of left procursus, prolateral view. **735**. Tip of left procursus, retrolateral view. **736**. Epigynum, ventral view. **737**. Epigynum, dorsal view. Scale lines: 0.5 mm (733), 0.2 mm (732, 734–737).

733, with distinct retrolateral coxal apophysis, femur proximally with rounded retrolateral protrusion and distally with distinct ventral apophysis, procursus distally with black spine (figs. 734–735). Legs light brown with dark rings on femora (subdistally) and tibiae (proximally and subdistally); legs without spines, with curved hairs on tib-

iae and metatarsi 1–3, with few vertical hairs; retrolateral trichobothrium of tibia 1 at 12%; tarsus 1 with 23 quite distinct pseudosegments. Opisthosoma about as high as long, shape as in *C. uru* (cf. fig. 657), dark greenish-gray with blackish spots dorsally and laterally; large, light brown genital plate.

VARIATION: Tibia 1 (4 male paratypes): 4.7–4.9.

FEMALE (paratypes): Tibia 1 (N = 10) 3.5–3.9 ($\bar{x}$ = 3.7). Very similar to male, including curved hairs on legs. Epigynum very distinctive, with two small apophyses posteriorly (fig. 736); internal genitalia with pair of large pore plates (fig. 737).

DISTRIBUTION: Known only from Parque Nacional Abiseo, Dept. San Martín, Peru.

MATERIAL EXAMINED: PERU: *San Martín*: Parque Nacional Abiseo: Pampa del Cuy: types above; same locality and collector: Mar. 2–3, 1988 (2 vials), 2♂ 5♀ 1 juvenile in MUSM; Mar. 7, 1988, 2♂ 1♀ in MUSM; Parque Nacional Abiseo: Puerta del Monte, 3300 m elev., Mar. 4–8, 1988 (2 vials; D. Silva & A. Salirrosas), 4♀ in MUSM.

MESABOLIVAR GONZÁLEZ-SPONGA, 1998

Mesabolivari González-Sponga, 1998: 27 (type species by original designation *M. pseudoblechroscelis* González-Sponga, 1998; not examined—the newly described *M. huambisa* is a very close relative).

NOTES: This genus roughly corresponds to *Blechroscelis* Simon, 1893. However, the type species of *Blechroscelis* (*Pholcus annulipes* Keyserling) is congeneric with the type species of *Priscula* Simon, 1893, a genus described in the same paper as *Blechroscelis*. The first question that has thus to be answered is the following: is *B. annulipes* a misidentified type species? If yes, Article 70.3 of the International Code of Zoological Nomenclature (ICZN, 1999) would apply. I believe it is not, for two reasons: first, there is apparently no material labeled *"B. annulipes"* in the MNHN in Paris, meaning that Simon probably never saw any material of what he considered to be *B. annulipes*, but based his decision on Keyserling's description; second, Keyserling's (1877) description is accurate and detailed, so it is not probable that Simon missed the fact that *B. annulipes* did not quite fit his own description of *Blechroscelis*.

This means that *Priscula* and *Blechroscelis* have to be treated as subjective synonyms. Since they were proposed in the same publication, the Principle of the First Reviser (ICZN, 1999: Art. 24.2) provides that the first reviser determines the relative precedence. I chose *Priscula* as senior synonym, for two reasons: first, it leaves the well-defined genus *Priscula* intact in its original meaning; second, it only affects *Blechroscelis*, a polyphyletic genus that has come to include species from what are herein considered to be representatives of five genera.

The next question is: which is the next available name for the species corresponding to Simon's original conception of *Blechroscelis*? González-Sponga (1998) proposed the new genus *Mesabolivari*, whose type species clearly falls into the large group of species corresponding to Simon's *Blechroscelis*. However, *Mesabolivari* has the form of a Latin two-word phrase ("tableland of Bolívar"—I am indebted to H. D. Cameron for advice concerning this and what follows). The ICZN (1999: Art. 26) specifies that such a spelling must be considered Latin, and thus *Mesabolivari* is a two word-phrase, not a compound noun. It does not, therefore, fulfill one of the Criteria of Availability (ICZN, 1999: Art. 11.8), and must be corrected. [It is also not an "arbitrary combination of letters" (Art. 11.3), since it is explicitly meant to refer to the city Mesa Bolívar]. Instead of changing "bolivari" to the corresponding nominative singular (which would result in the grammatically awkward combination "Mesabolivarus"), I here choose the emended form *Mesabolivar*, which renders it a simple noun without the complication of Latin grammar.

The final question regards the gender of the genus. No gender was explicitly attributed to *Mesabolivari* by González-Sponga (1998), and no gender is grammatically self-evident, neither in *Mesabolivari* nor in *Mesabolivar*. The specific name of the single species included by the author (*pseudoblechroscelis*) is a noun in apposition (ICZN, 1999: Art. 11.9.1.2) (anything ending in "-scelis" is a noun, not an adjective), and gives

therefore no indication of the intended gender of the genus *Mesabolivari*. Therefore, *Mesabolivar* is to be treated as masculine (ICZN, 1999: Art. 30.2.4).

DIAGNOSIS: (The diagnosis given herein is valid only for a core-group of species close to the type species; see Specific Relationships below for species assigned tentatively). Medium-sized to fairly large (total length ~ 3–6 mm), usually dark, eight-eyed pholcids with long legs, usually oval to elongate opisthosoma; distinguished from similar neotropical genera (*Coryssocnemis*, *Carapoia*) by the median groove or pocket on the female epigynum, and a corresponding pair of contiguous apophyses frontally on the male chelicerae. These characters are missing in a few species (*M. huanuco*, n. sp., *togatus* (Keyserling), *maxacali*, n. sp.) which are nevertheless assigned to the core-group because of overall and specific similarities (see below).

DESCRIPTION: Total length usually ~ 3–6 mm. Carapace with distinct thoracic groove, ocular area moderately to conspicuously elevated, with eight eyes, AME smallest. Distance PME-ALE relatively large (65–100% of PME diameter). Sternum without anterior humps. Male clypeus unmodified. Basal segment of male chelicerae usually with pair of contiguous apophyses frontally, sometimes with additional apophyses more proximally; without modified hairs; fangs unmodified; without stridulatory ridges laterally. Male palpal coxa with retrolateral apophysis, procursus and bulb relatively simple, variable in shape. Tarsal organ exposed [examined: *M. huanuco*, n. sp., *eberhardi*, n. sp., *aurantiacus* (Mello-Leitão): fig. 81, *junin*, n. sp., *iguazu*, n. sp., *cyaneotaeniatus* (Keyserling)]. Legs long (leg 1 usually ~ 10–20 × body length; tibia 1 l/d usually ~ 70–100; 45 in *M. botocudo*, n. sp., 110 in *M. aurantiacus*); leg 1 longest, leg 2 usually longer than leg 4, leg 3 shortest; in most species femora of some walking legs (usually femora 2, 2 and 3, or 3) thicker than others (not in *M. huanuco*, *locono*, n. sp., *iguazu*); legs sometimes with spines on metatarsi, only in *M. spinulosus* (Mello-Leitão) and *M. cambridgei* (Mello-Leitão) with spines on femora and tibiae; without curved hairs (except in some *M. cambridgei* specimens), without vertical hairs (except *M. cyaneotaeniatus*, which has vertical hairs on femora); retrolateral trichobothrium of tibia 1 very proximal (at 1.5–3%); tarsus 1 usually with 30 or more pseudosegments (~ 25 in *M. iguazu* and *botocudo*). Opisthosoma usually oval to elongate, cylindrical in *M. cyaneotaeniatus*, usually with pattern of dark spots dorsally. Male gonopore without epiandrous spigots (examined: *M. huanuco*, *eberhardi*, *aurantiacus*, *junin*, *iguazu*: fig. 138, *cyaneotaeniatus*). ALS with only one piriform gland spigot each (examined: *M. huanuco*, *eberhardi*: figs. 183–184, *aurantiacus*, *junin*, *iguazu*, *cyaneotaeniatus*), other spinnerets typical for family.

Sexual dimorphism slight. Females often with more distinct rings on legs, without spines on legs. Epigynum usually with median groove or pocket, sometimes with additional lateral apophyses that are conspicuous in some species.

MONOPHYLY: Most species included share the median groove or pocket on the epigynum (see Specific Relationships for species assigned tentatively).

GENERIC RELATIONSHIPS: The genus is clearly part of the New World clade: male palpal coxa with retrolateral apophysis, epiandrous spigots absent, ALS piriform gland spigots reduced to one, thoracic groove present, exposed tarsal organ, large distance PME-ALE. Otherwise, the phylogenetic relationships are obscure. The cladogram in appendix 2 proposes *Coryssocnemis* as sister group of *Mesabolivar* based on the presence of enlarged femora in walking legs. However, this character has considerable homoplasy (see Characters Scored section: char. 23).

SPECIFIC RELATIONSHIPS: The genus can tentatively be divided into four operational species groups; the first three correspond to the core-group mentioned above, the fourth includes species that were assigned to the genus for various reasons, but will probably have to be partly transferred in future more detailed studies. (1) A northern group widely distributed in northern South America, distinguished by the spines on the male metatarsi; including *M. eberhardi*, *huanuco*, *rubristernus* (Caporiacco), *aurantiacus*, and *cyaneus* (Taczanowski) which is possibly a

synonym of *rubristernus*. (2) A closely related group with a similar distribution, without spines on the male metatarsi, with high apophyses on the female epigynum and correspondingly prominent male cheliceral apophyses; including the type species *M. pseudoblechroscelis*, the closely related *M. huambisa*, and *M. locono*, *junin*, *paraensis* (Mello-Leitão), *exlineae* (Mello-Leitão). (3) A southern group widely distributed in southern and eastern Brazil and northern Argentina; several species have a distinctively curved procursus, but the group is probably not monophyletic; including *M. cyaneomaculatus* (Keyserling), *spinulosus*, *ceruleiventris* (Mello-Leitão), *tandilicus* (Mello-Leitão), *iguazu*, *argentinensis* (Mello-Leitão), *brasiliensis* (Mello-Leitão), *togatus* (Keyserling), *guapiara*, n. sp., *maxacali*, n. sp., *botocudo*, *cyaneotaeniatus*, *azureus* (Badcock and Oxon), and two species whose types I have not been able to examine: *M. fluminensis* (Mello-Leitão, 1918), n. comb., and *M. nigridentis* (Mello-Leitão, 1922), n. comb. (4) A miscellaneous group, certainly polyphyletic, whose representatives did not fit convincingly into any other genus: *M. luteus* (Keyserling), *simoni* (Moenkhaus), and possibly also *difficilis* (Mello-Leitão), have pockets on the epigynum; *M. levii*, n. sp., is probably very close to *M. luteus*; *M. banksi* (Moenkhaus) has a curved procursus like that of many representatives of the southern group; *M. cambridgei* resembles *M. huanuco* in respect to opisthosoma and epigynum shape, and has spines in bands on the femora like *M. spinulosus* and *M. luteus*; *M. xingu*, n. sp., is only known from the male and might be an unproblematic species of the southern group.

NATURAL HISTORY: To my knowledge, only *M. eberhardi* has been studied with some detail (see p. 201).

DISTRIBUTION: From northern South America to northern Argentina. In Colombia the genus is not known from west of the Andes. Together with *Metagonia*, this is probably the most widely distributed pholcid genus in South America. No representative is known from Central America, the Galápagos Islands, or the Antilles (except Trinidad).

COMPOSITION: The genus as construed here includes 35 nominal species: five species from the northern group (see Specific Relationships above), six species from group 2, 15 species from the southern group, seven species included tentatively, and two species incertae sedis (see below). The collections I have seen contain dozens of further species of this genus from various countries. If the definition is not narrowed, future revisions will probably yield up to hundreds of species. The following species previously included in *Blechroscelis* are either not congeneric with the type species of *Mesabolivar*, or are incertae sedis: *B. serripes* (transferred to *Tainonia*), *B. modesta* (transferred to *Waunana*), *B. annulipes* (transferred to *Priscula*). *"Mesabolivar" globulosus* (Nicolet, 1849) and "*M.*" *aurantius* (Mello-Leitão, 1940) are incertae sedis. I have seen what might be the type of *B. aurantia* from "Goytacazes," Espírito Santo, in MNRJ (58250); it is a penultimate female. Even though the vial number is correct, it may not be the type, as Mello-Leitão (1940a) describes the epigynum as "muy alto, bicorne." As for "*M.*" *globulosus*, I do not know if the type material still exists. Mello-Leitão (1941) gave usable illustrations of the epigynum and the male palp, but whether or not his specimens were correctly identified is unknown.

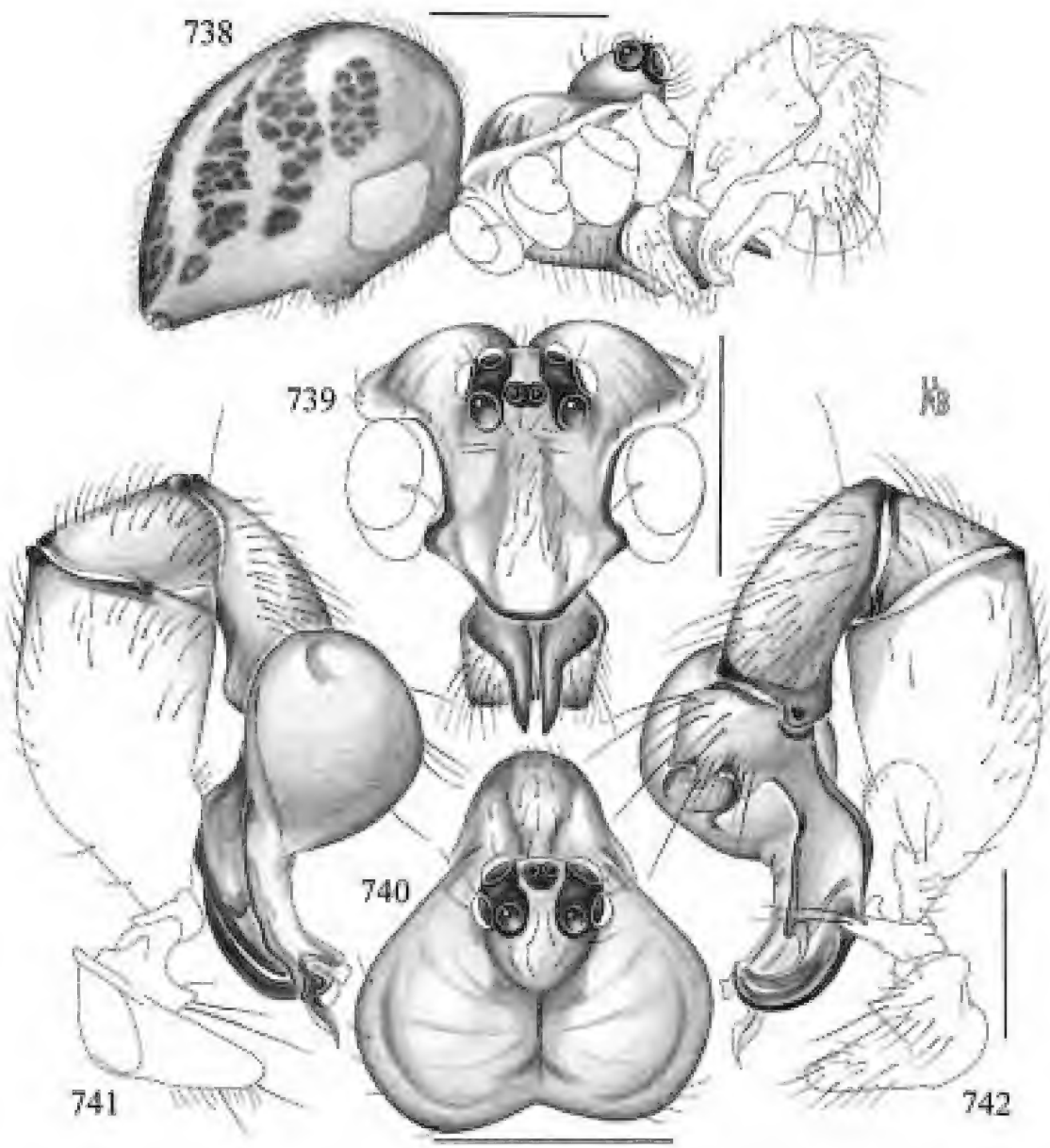
Mesabolivar huambisa, new species

Figures 738–747

TYPES: Male holotype, 21♂ 18♀ paratypes from Rio Samiria (4°43′S, 74°18′W), Dept. Loreto, Peru; May–June 1990 (T. Erwin "et al."), in MUSM.

ETYMOLOGY: The specific name is a noun in apposition honoring the Huambisa Indians from Peru, whose fierce resistance to subjugation has made them one of the few tribes in South America who still occupy the land that they held in the preconquest era.

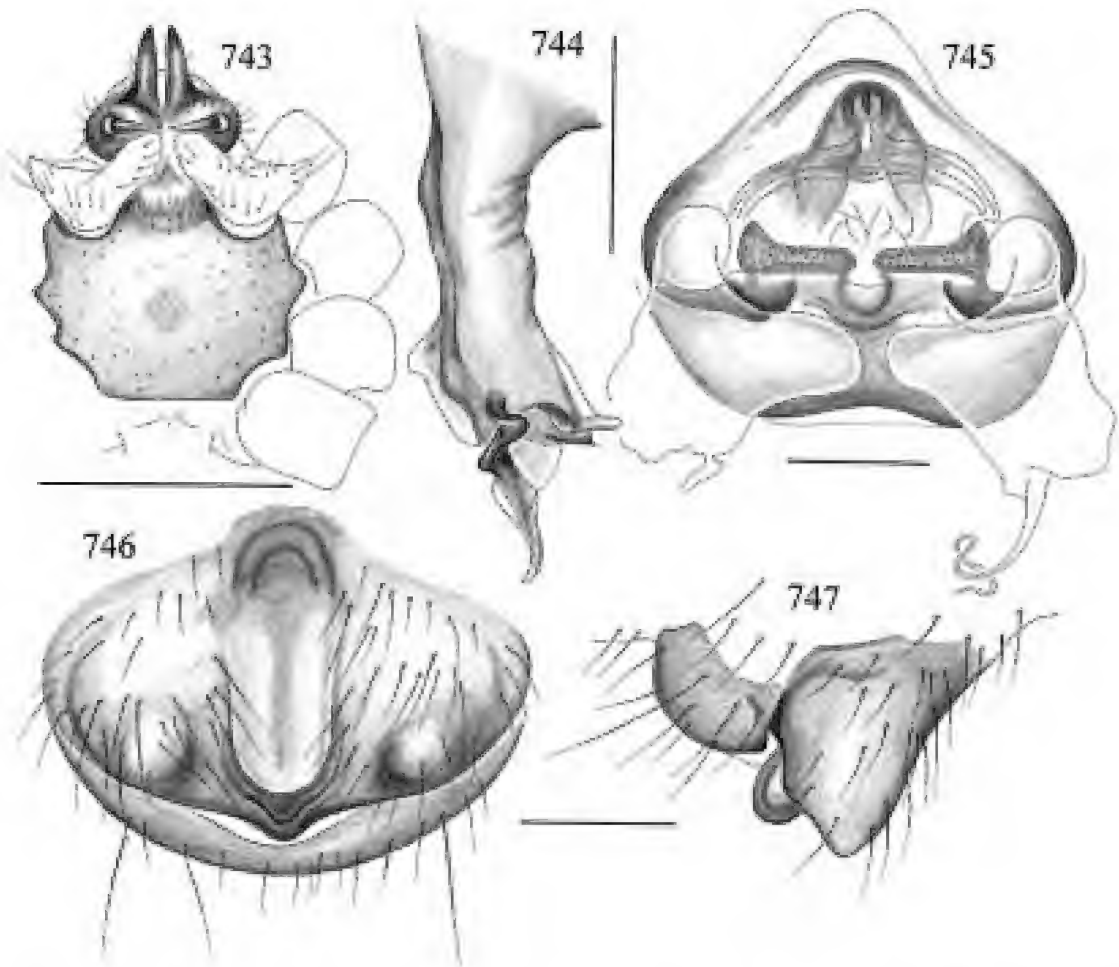
DIAGNOSIS: Closely related to the type species *M. pseudoblechroscelis*, distinguished by the procursus, which is longer and less strongly bent dorsally in the present species (fig. 742). Distinguished from *M. locono* by the straight cheliceral apophyses and the shape of the procursus (figs. 738, 742); from *M. junin* by the shape of the procursus; from *M. exlineae* and *paraensis* by the epigynum



Figs. 738–742. *Mesabolivar huambisa*, n. sp., male. **738**. Habitus, lateral view. **739–740**. Prosoma, frontal and dorsal views. **741**. Left palp, prolateral view. **742**. Left palp, retrolateral view. Scale lines: 1.0 mm (738–740), 0.5 mm (741–742).

(shape of lateral apophyses and median pocket, figs. 746–747).

MALE (holotype): Total length 3.0, carapace width 1.3; leg 1: 52.3 (12.7+0.6+12.4 +23.9+2.7), tibia 2: 8.3, tibia 3: 5.7, tibia 4: 8.0; tibia 1 l/d: 93. Habitus as in fig. 738; carapace orange-ochre with light brown spot behind ocular area, with deep thoracic groove; eight eyes on prominently elevated ocular area (figs. 738–739); distance PME-ALE about 65% of PME diameter. Sternum light brown, wide (fig. 743); chelicerae



Figs. 743–747. *Mesabolivar huambisa*, n. sp. **743**. Male prosoma, ventral view. **744**. Embolar division of left bulb, prolateral view. **745**. Epigynum, dorsal view. **746–747**. Epigynum, ventral and lateral views. Scale lines: 1.0 mm (743), 0.3 mm (744–747).

brown proximally, pale ochre-yellow distally, with pair of large straight apophyses, slightly hooked at tips (figs. 738–739). Palp (especially femur) very large in relation to prosoma; coxa with distinct, pointed retrolateral apophysis, trochanter with prominent ventral apophysis (fig. 742), femur proximally with retrolateral apophysis (fig. 742); procursus curved distally (fig. 742); bulb as in figs. 741, 744, with slightly spiraling apophysis. Legs ochre to light brown, femora and tibiae with light tips; legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 with over 30 pseudosegments. Opisthosoma pale greenish, with darker greenish spots dorsally.

VARIATION: Tibia 1 in 6 male paratypes: 10.7–13.6 ($\bar{x}$ = 11.8). In the male from Napo, Alinahui, Ecuador, the tip of the procursus is slightly different; the male and the female from this locality are therefore assigned tentatively.

FEMALE (paratypes): Tibia 1 (N = 5) 7.9–8.8 ($\bar{x}$ = 8.3). In general very similar to male, but with distinct dark rings on femora (subdistally) and tibiae (proximally and subdistally), subdistal rings followed by light tips. Epigynum dark brown, with median

pocket and pair of lateral apophyses (figs. 746–747); internal genitalia with distinctively formed pore plates, and large membranous structures of unknown function reaching into lateral apophyses (fig. 745).

DISTRIBUTION: Known from northern Peru and Ecuador.

MATERIAL EXAMINED: PERU: *Loreto*: Rio Samiria: types above; same locality, June 16, 1990 (T. Erwin "et al."), 3♂ in MUSM; Cocha Shinguito (5°08′S, 74°45′W), June 18, 1990 (T. Erwin "et al."), 1♂ in MUSM. ECUADOR: *Napo*: 20 km E Puerto Napo, Alinahui (1°00′S, 77°25′W), 450 m elev., Jan. 1994 (V. D. & B. Roth), 1♂ assigned tentatively, in CAS; same data, in building, 1♀ assigned tentatively, in CAS; Reserva Faunistica Cuyabeno, Laguna Grande (0°00′S, 76°10′W), from *Macrolobium* trees in lake, June 28, 1988 (W. Maddison), 1♂ 2♀ (2 vials) in MCZ; Pompeya, Napo River, May 1965 (L. Peña), 1♂ 1 juvenile in MCZ.

Mesabolivar locono, new species

Figures 748–755

TYPE: Male holotype from Lawa River, Benzdorp, Marowijne Dist., Surinam; "forest night sweep," Nov. 6, 1963 (B. Malkin), in AMNH.

NOTE: It is possible that this is a junior synonym of *M. paraensis* (of which only the female is known; see below).

ETYMOLOGY: The species name is a noun in apposition, honoring the Locono people of eastern Venezuela, Guyana, Surinam, and French Guiana.

DIAGNOSIS: Distinguished from *M. huambisa* by the curved cheliceral apophyses (fig. 750); from *M. junin* and *M. pseudoblechroscelis* also by the shape of the procursus (figs. 753–755).

MALE (holotype): Carapace width 1.4, carapace length 1.1 (opisthosoma missing); leg 1: 34.0 (8.3+0.3+8.4+15.1+1.9), tibiae 2 and 3 missing, tibia 4: 5.7; tibia 1 l/d: 79. Colors poorly preserved (entire animal light brown); carapace with deep thoracic groove; eight eyes on prominent elevation (fig. 748); distance PME-ALE about 65% of PME diameter. Chelicerae with pair of large, strongly curved apophyses (fig. 750). Palp (especially femur) very large in relation to prosoma; coxa with distinct apophysis, femur proximally with retrolateral apophysis and small ventral hump slightly more distally (fig. 753); procursus rather simple, strongly curved (figs. 754–755); bulb relatively simple (globular part shrunken in type) (fig. 752). Legs apparently without spines, without curved and vertical hairs (many hairs missing). Opisthosoma missing.

VARIATION: The male from Guyana (see below) differs minimally with respect to the tip of the procursus and is slightly larger (tibia 4: 6.5), but otherwise indistinguishable.

FEMALE: Unknown (see Note above).

DISTRIBUTION: Known from Surinam and Guyana.

MATERIAL EXAMINED: SURINAM: *Marowijne*: Benzdorp: type above. GUYANA: *Mazaruni-Potaro*: Kartabo Point, Dec. 22–24, 1983 (W. Steiner, J. Byrd, J. Hill, F. Holtzclaw), 1♂ in USNM.

Mesabolivar junin, new species

Figures 756–766

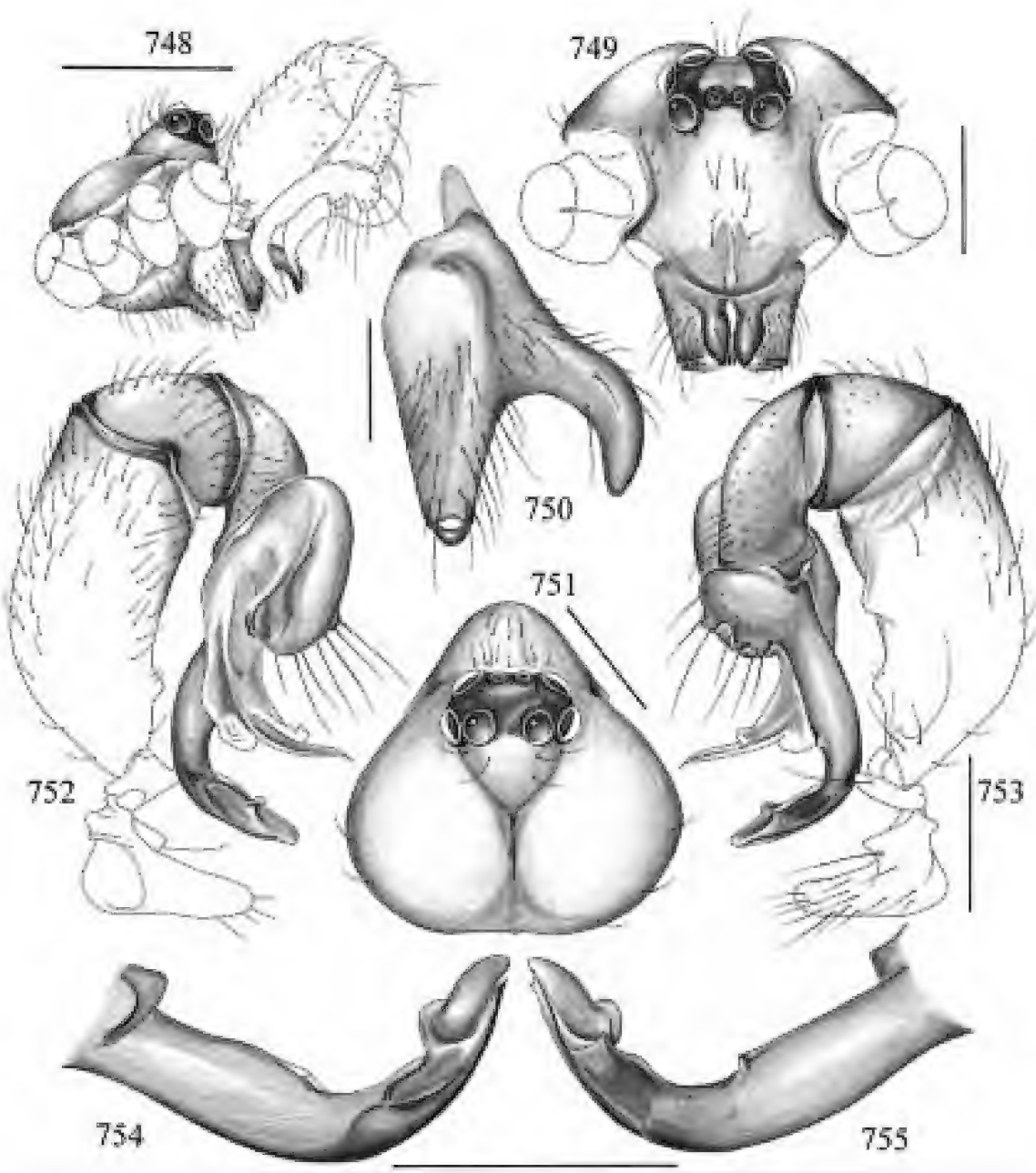
"Peruvian pholcid, I.D. #2": Huber, 1999: figs. 8–11.

TYPES: Male holotype, 2♂ 2♀ paratypes from Utcuyacu, Dept. Junin, Peru; 1600–2000 m elev., Feb.–Mar. 1948 (3 vials) (F. Woytkowski), in AMNH.

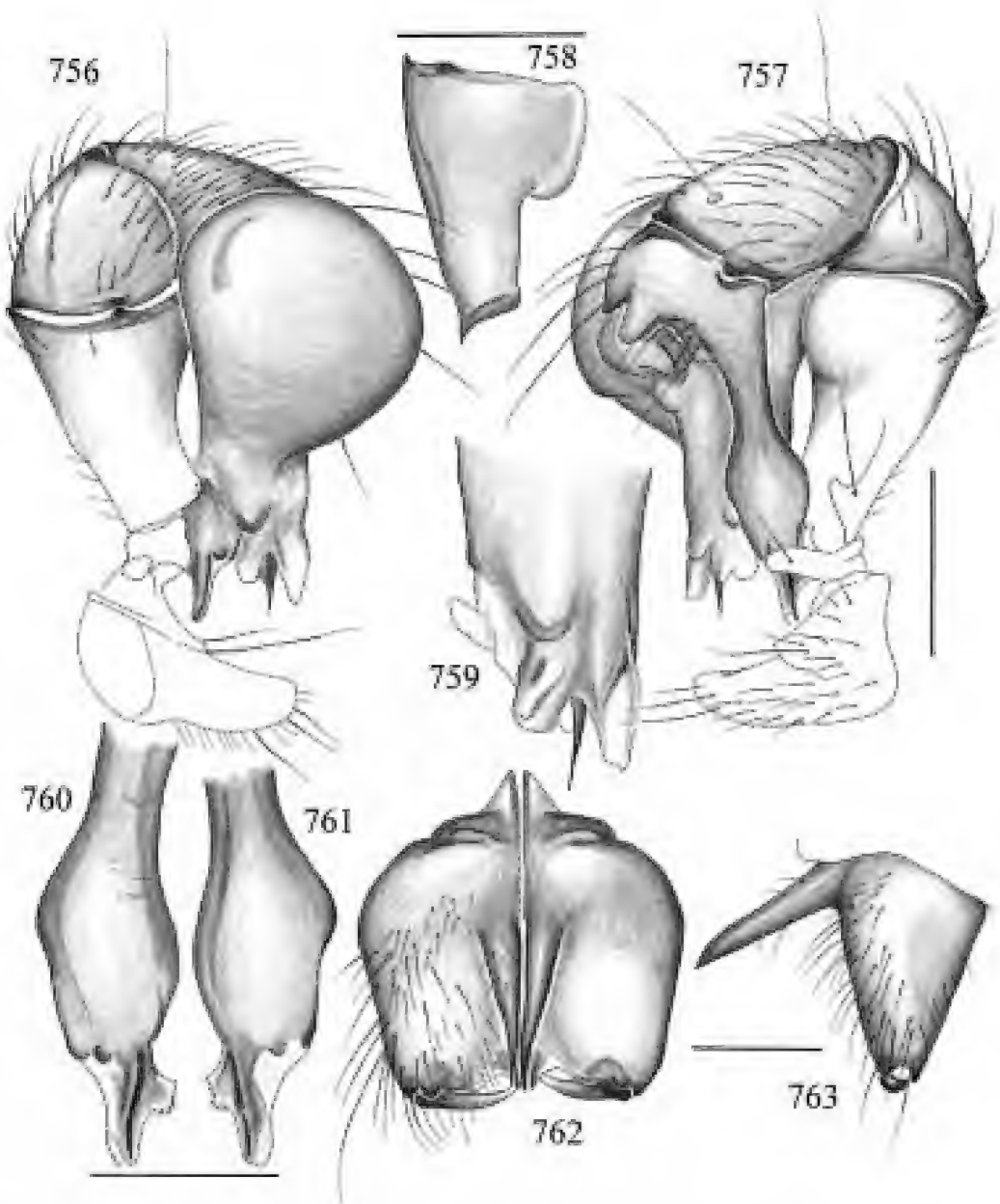
ETYMOLOGY: Named for the Peruvian state Junin. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from *M. locono* by the straight cheliceral apophyses (fig. 763); from *M. huambisa* and *M. pseudoblechroscelis* also by the shape of the procursus (figs. 757, 760–761); from *M. exlineae* and *paraensis* by the epigynum (shape of lateral apophyses and median pocket, figs. 764–765).

MALE (holotype): Total length 3.8, carapace width 1.7; leg 1: (12.4+0.7+11.9 +16.5, tarsus missing), tibia 2: 7.7, tibia 3: 5.5, tibia 4: 6.8; tibia 1 l/d: 69. Habitus similar to *M. huambisa* (cf. fig. 738); carapace light ochre brown, darker roundish spot medially, ocular area brown with light median stripe, with stronger saddle behind eyes than *M. huambisa*; distance PME-ALE about 100% of PME diameter. Clypeus and sternum light ochre-brown; chelicerae ochre-brown with pair of strong, projecting frontal

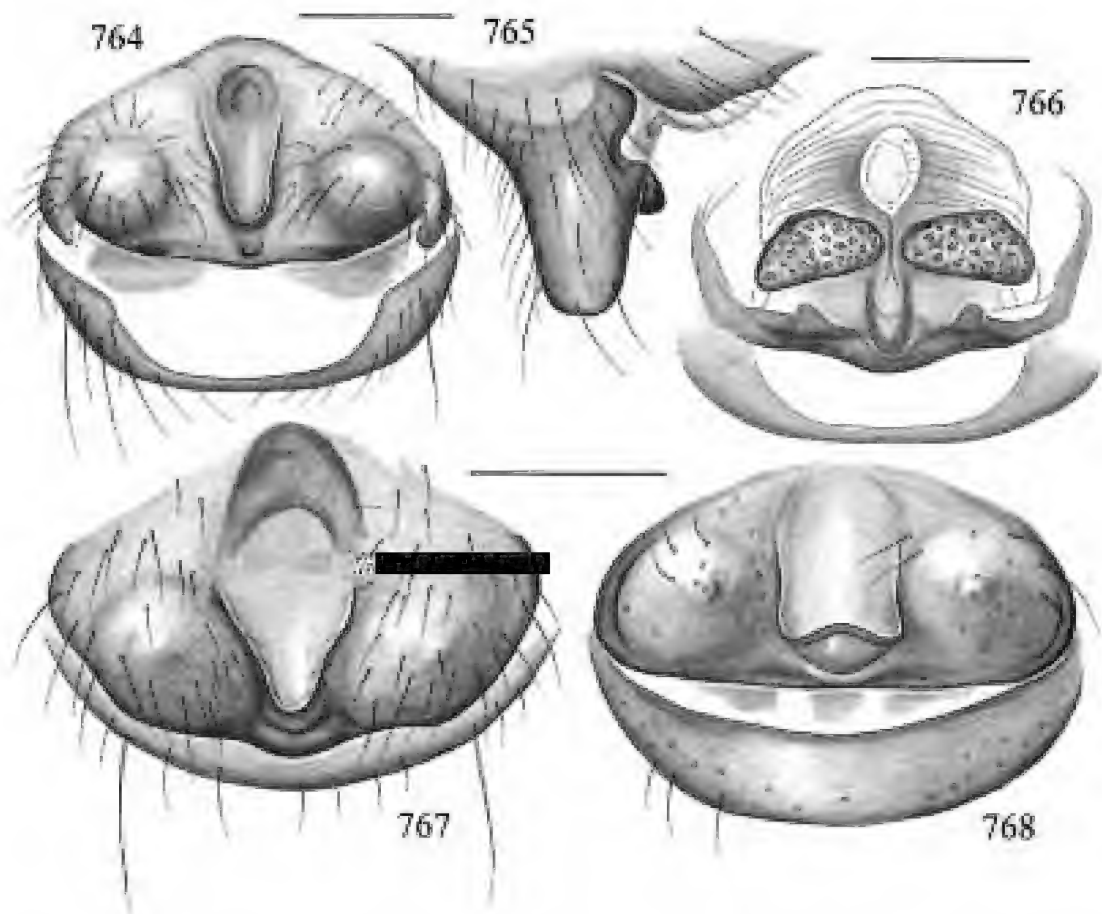


Figs. 748–755. *Mesabolivar locono*, n. sp., male holotype. **748**. Prosoma with right palp, lateral view. **749**. Prosoma, frontal view. **750**. Chelicerae, lateral view. **751**. Prosoma, dorsal view. **752**. Left palp, prolateral view (note that bulb is shrunken). **753**. Left palp, retrolateral view. **754**. Left procursus, prolateral view. **755**. Left procursus, retrolateral view. Scale lines: 1.0 mm (748), 0.5 mm (749, 751–755), 0.2 mm (750).



Figs. 756–763. *Mesabolivar junin*, n. sp., male. **756**. Left palp, prolateral view. **757**. Left palp, retrolateral view. **758**. Left palpal femur, prolateral view. **759**. Embolar division of left bulb, prolateral view. **760**. Left procursus, retrolateral view. **761**. Left procursus, prolateral view. **762–763**. Chelicerae, frontal and lateral views. Scale lines: 0.5 mm (756–758), 0.3 mm (760–763).

apophyses (figs. 762–763). Palps as in figs. 756–757, coxa with distinct retrolateral apophysis, trochanter with prominent ventral apophysis, femur with retrolateral apophysis proximally and ventral hump distally (figs. 757–758), procursus widened before tip, but more or less straight (figs. 757, 760–761), embolar division with terminal spine and membranous structures (fig. 759). Tarsal organ exposed. Legs ochre-brown, darker rings on femora (subdistally) and tibiae (proximally and subdistally); femora 3 significantly



Figs. 764–768. *Mesabolivar* spp. 764–766. *M. junin*, n. sp. **764–765**. Epigynum, ventral and lateral views. **766**. Epigynum, dorsal view. **767**. *M. paraensis* (Mello-Leitão), female holotype: epigynum, ventral view. **768**. *M. exlineae* (Mello-Leitão), female holotype: epigynum, ventral view. Scale lines: 0.3 mm.

thicker than others; all legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 (paratype) with over 35 pseudosegments. Opisthosoma shape as in *M. huambisa* (cf. fig. 738), gray with blackish spots dorsally, genital plate light brown; gonopore without epiandrous spigots; ALS with only one piriform gland spigot each.

VARIATION: Tibia 1 in male paratypes: 10.7, 12.0; one male has on the opisthosoma also some white spots among the black spots.

FEMALE (paratypes): Total length 3.6, 4.1; tibia 1: 6.5, 6.8. In general very similar to male. Epigynum brown, with median pocket and pair of high, roundish apophyses laterally (figs. 764–765); dorsal view as in fig. 766.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: PERU: *Junin*: Utcuyacu: types above.

Mesabolivar paraensis (Mello-Leitão, 1947), new combination

Figure 767

Coryssocnemis paraensis Mello-Leitão, 1947b: 161–162, fig. 7.

TYPE: Female holotype from Breves, Pará, Brazil; no date (F. O. Pickard-Cambridge), in BMNH (B.M.97.9.21.501-508), examined.

NOTES: It is not entirely clear whether this

is actually the specimen described by Mello-Leitão (1947b). His drawing of the epigynum is quite different, and he mentions also the male, while the female holotype is the only specimen in the type vial.

It is possible that *C. paraensis* is a senior synonym on *M. locono* (of which only the male is known; see above).

DIAGNOSIS: Distinguished from close relatives (*M. exlineae*, *junin*, *huambisa*) by the shape of the epigynal pocket and the epigynal apophyses (fig. 767).

MALE: Unknown (see Notes above).

FEMALE (holotype): Total length 3.3, carapace width 1.3, carapace length 1.1, opisthosoma length 2.2; leg 1 missing, tibia 2: 3.5, tibia 3: 2.6, tibia 4: 3.9. Habitus as in *M. huambisa* (cf. fig. 738); carapace orange-ochre, with slightly darker median spot anteriorly, ocular area ochre to light brown, clypeus ochre, sternum pale ochre, chelicerae light brown, legs ochre-yellow with dark rings on femora (subdistally) and tibiae (proximally and subdistally), most hairs on legs missing. Opisthosoma greenish-ochre with darker greenish spots dorsally. Epigynum light to dark brown, with distinctive median pocket and lateral apophyses (fig. 767).

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BRAZIL: *Pará*: Breves: type above.

Mesabolivar exlineae (Mello-Leitão, 1947), new combination

Figure 768

Modisimops exlineae Mello-Leitão, 1947b: 159, fig. 1.
Modisimus exlineae: Brignoli, 1983: 164.

TYPE: Female holotype from Capachica, Dept. Puno, Peru; Apr. 20, 1934 (Lake Titicaca Expedition, Percy Sladen Memorial Fund, "G.I.C. 22"), in BMNH (1940.12.30.108), examined.

NOTES: The measurements and Mello-Leitão's short characterization of the epigynum ("very high, with two horns") suggest that this is actually the specimen described by Mello-Leitão (1947b). His drawing of the epigynum, however, is quite different, and as type locality he erroneously gives "Pebas (Perú)."

The MUSM and USNM have material from Madre de Dios (Peru) and Beni (Bolivia) that is possibly conspecific, but this can only be decided when more material from the type locality becomes available.

DIAGNOSIS: Distinguished from close relatives (*M. paraensis*, *junin*, *huambisa*) by the shape of the epigynal pocket and the epigynal apophyses (fig. 768).

MALE: Unknown.

FEMALE (holotype): Total length 3.0, carapace width 1.2, carapace length 1.1, opisthosoma length 2.0; femur 1: 6.0 (rest missing), leg 2: (4.1+0.4+3.3, rest missing), leg 3: (3.3+0.4+2.6, rest missing), leg 4: 16.4 (4.7+0.4+3.9+6.3+1.1). Habitus as in *M. huambisa* (cf. fig. 738), prosoma blackish-ochre (apparently artificially darkened); sternum, chelicerae, and palps ochre. Legs ochre-yellow, dark rings on femora (subdistally) and tibiae (proximally and subdistally), most hairs on legs missing. Opisthosoma dark gray, covered with blackish spots. Epigynum light to dark brown, with distinctive wide median pocket and pointed lateral apophyses (fig. 768; in lateral view epigynum hardly distinguishable from that of *M. huambisa*, cf. fig. 747).

DISTRIBUTION: Known only from type locality (see Notes above).

MATERIAL EXAMINED: PERU: *Puno*: Capachica: type above.

Mesabolivar eberhardi, new species

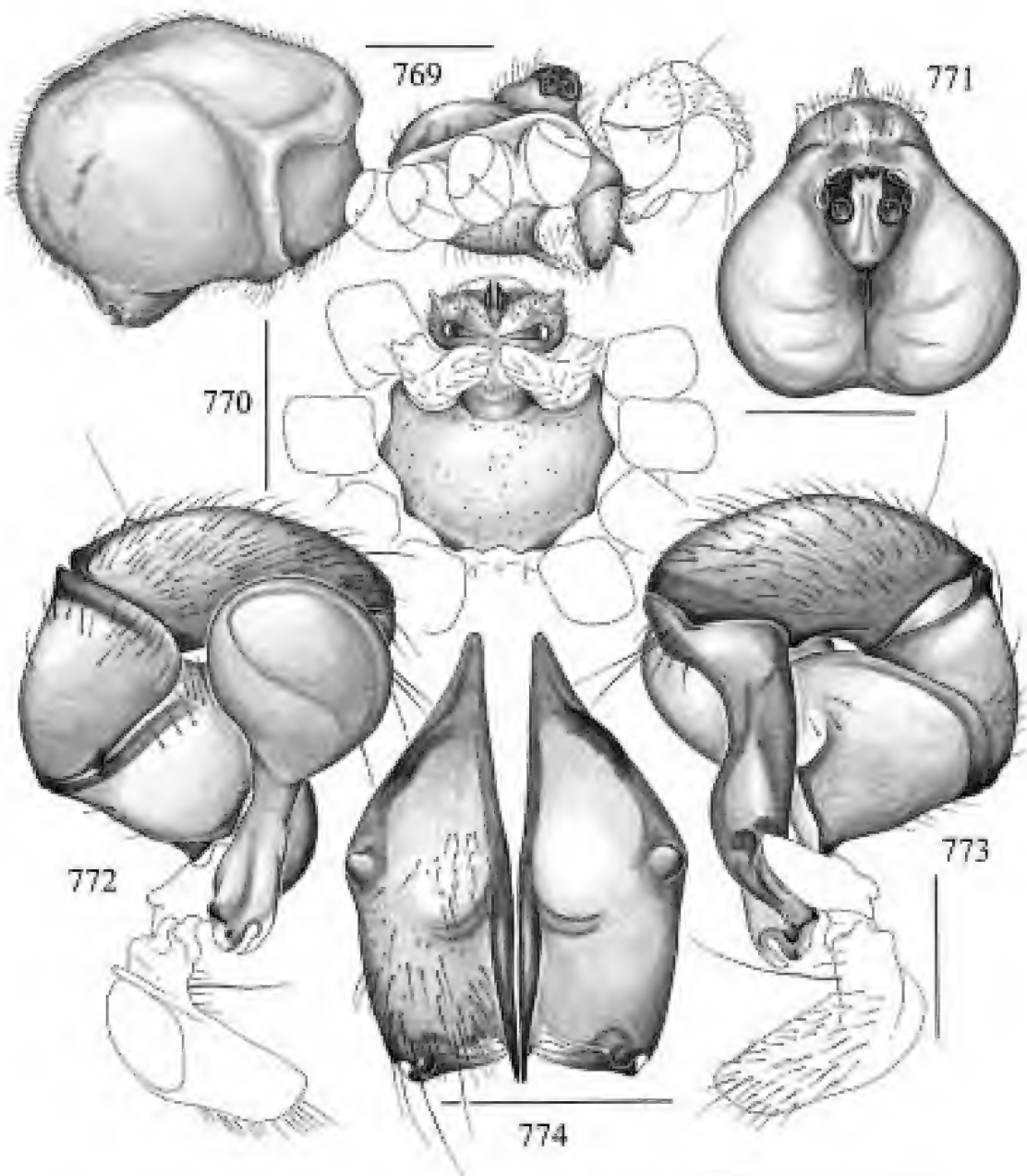
Figures 184, 194, 769–781

Blechroscelis sp.: Eberhard and Briceño, 1983: 189–195, fig. 1; 1985: 29–36, figs. 2a–b.–Huber, 1998d: fig. 2S.

TYPES: Male holotype, 2♂ 6♀ paratypes from Caripe, Monagas, Venezuela; Cueva del Guacharo, hand collecting, Aug. 20–21, 1987 (S. & J. Peck), in AMNH.

ETYMOLOGY: Named for W. G. Eberhard who collected and studied this species in Colombia.

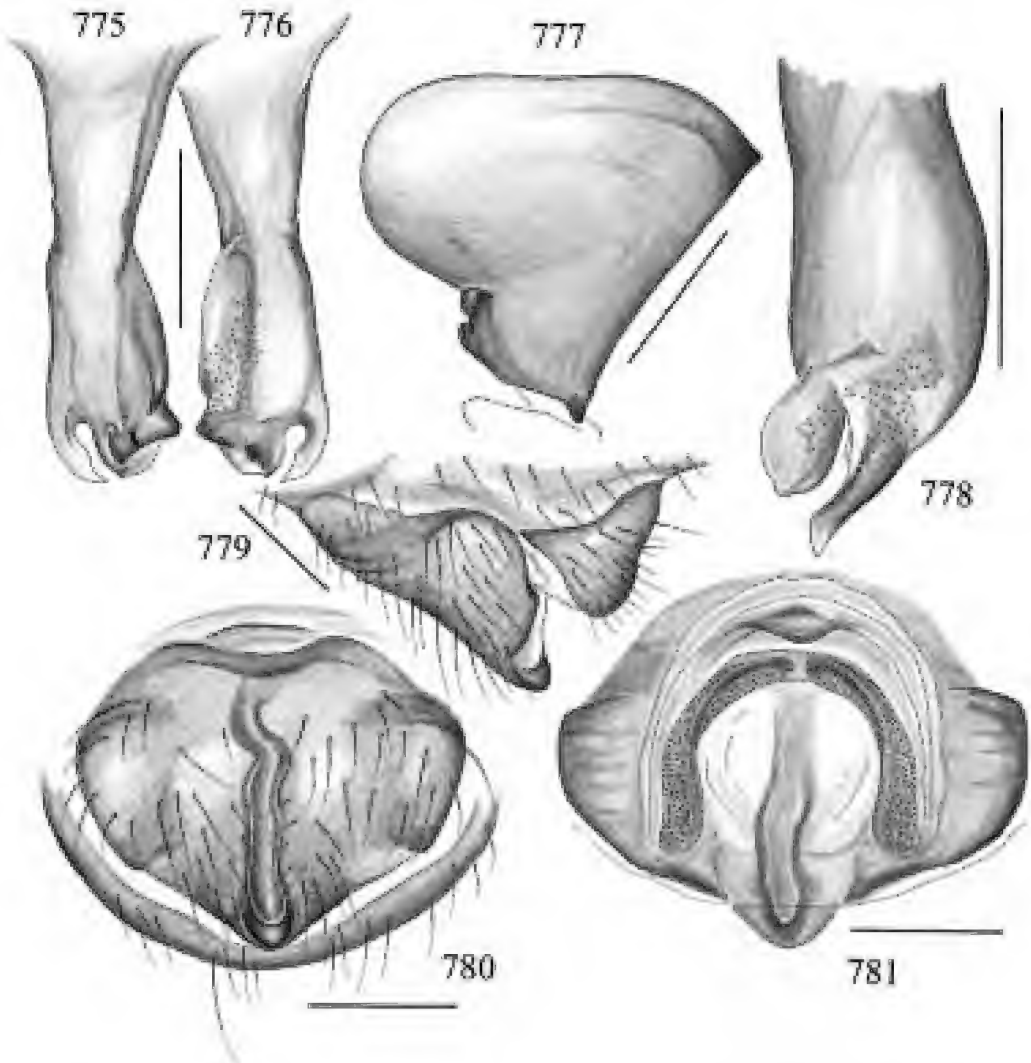
DIAGNOSIS: Distinguished from close relatives (*M. rubristernus*, *aurantiacus*, *huanuco*) by the hugely enlarged femur (fig. 777), by the lateral apophyses on the male chelicerae in addition to the pair of frontal apophyses (fig. 774), by the tip of the procursus, consisting of two distinctively shaped parts



Figs. 769–774. *Mesabolivar eberhardi*, n. sp., male. **769**. Habitus, lateral view. **770–771**. Prosoma, ventral and dorsal views. **772**. Left palp, prolateral view. **773**. Left palp, retrolateral view. **774**. Chelicerae, frontal view. Scale lines: 1 mm (769–771), 0.5 mm (772–774).

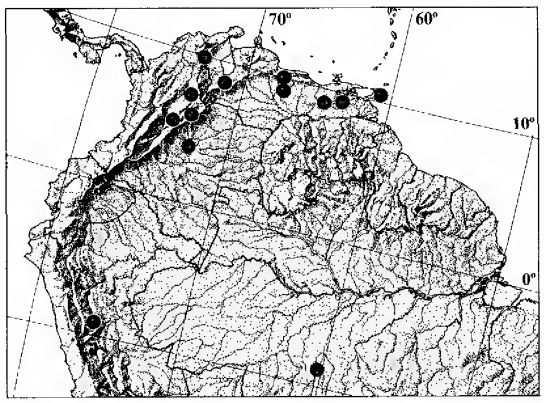
(fig. 778), and the tip of the bulb with its dorsal semitransparent projection (figs. 775–776).

MALE (holotype): Total length 4.6, carapace width 1.7; leg 1: (13.1+0.8+11.6 +23.5, tarsus missing), tibia 2: 8.1, tibia 3: 5.9, tibia 4: 7.7; tibia 1 l/d: 67. Habitus as in fig. 769 (opisthosoma shrunken); distance PME-ALE about 80% of PME diameter. Carapace light brown with dark brown median



Figs. 775–781. *Mesabolivar eberhardi*, n. sp. **775–776**. Embolar division of left bulb, retrolateral (775) and prolateral (776) views. **777**. Male left palpal femur, ~ retrolateral view. **778**. Left procursus, prolateral view. **779–780**. Epigynum, lateral and ventral views. **781**. Epigynum, dorsal view. Scale lines: 0.3 mm.

spot, ocular area dark brown, clypeus slightly orange, sternum very light brown, darker medially; chelicerae ochre, with pair of dark brown to black frontal apophyses and weakly sclerotized lateral apophyses (figs. 770, 774). Palps as in figs. 772–773, coxa retrolaterally with ridge rather than apophysis, trochanter with prominent apophysis, femur extremely widened distally (fig. 777), procursus ending in dorsal apophysis and ventral flap (fig. 778), embolus with prolateral subterminal spine and dorsal flat projection (figs. 775–776). Tarsal organ exposed. Legs brown, with faint darker rings on femora (subdistally) and tibiae (proximally and subdistally); femora 3 slightly thicker than others; metatarsi 2 and 3 with single row of spines ventrally (cf. *M. huanuco*, fig. 791); legs without vertical and curved hairs; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 (paratype) with ~ 35 pseudosegments. Opisthosoma greenish-gray, dorsally with darker spots;



Map 5. Known distribution of *Mesabolivar eberhardi*, n. sp.

genital plate trapezoidal, light brown; gonopore without epiandrous spigots; ALS with only one piriform gland spigot each (cf. female: fig. 184).

VARIATION: Tibia 1 in 10 males: 11.1–13.6 ($\bar{x}$ = 12.6). As might be expected in a species with wide distribution (see below), there is some variation in the details of the procursus tip: in the males from Colombia, the two distal structures are shorter, while in the males from Mato Grosso and Peru the entire procursus is slightly shorter and more curved. At the present state of knowledge it seems preferable to lump these slightly different specimens into one easily distinguishable species.

FEMALE: Total length (N = 3) 3.3–4.0, tibia 1 (N = 15) 6.8–11.1 ($\bar{x}$ = 8.9). In general very similar to male, but rings on legs usually quite distinct, metatarsi without spines, opisthosoma rarely also with white spots. Epigynum slightly elevated (fig. 779), with distinctive groove ending posteriorly in pocket (fig. 780), dorsal view as in fig. 781.

DISTRIBUTION: Known from Colombia, Venezuela, Trinidad, Peru, and Brazil (Mato Grosso) (map 5).

NATURAL HISTORY: Eberhard and Briceño (1983, 1985) give data on behavior and ecology of a population from the tropical dry forest life zone in Meta, Colombia: the spiders spin dome-shaped sheet webs in forest habitats; males search out mature females and cohabit webs with them; males are "chivalrous" in that they are dominant but cede prey to the female.

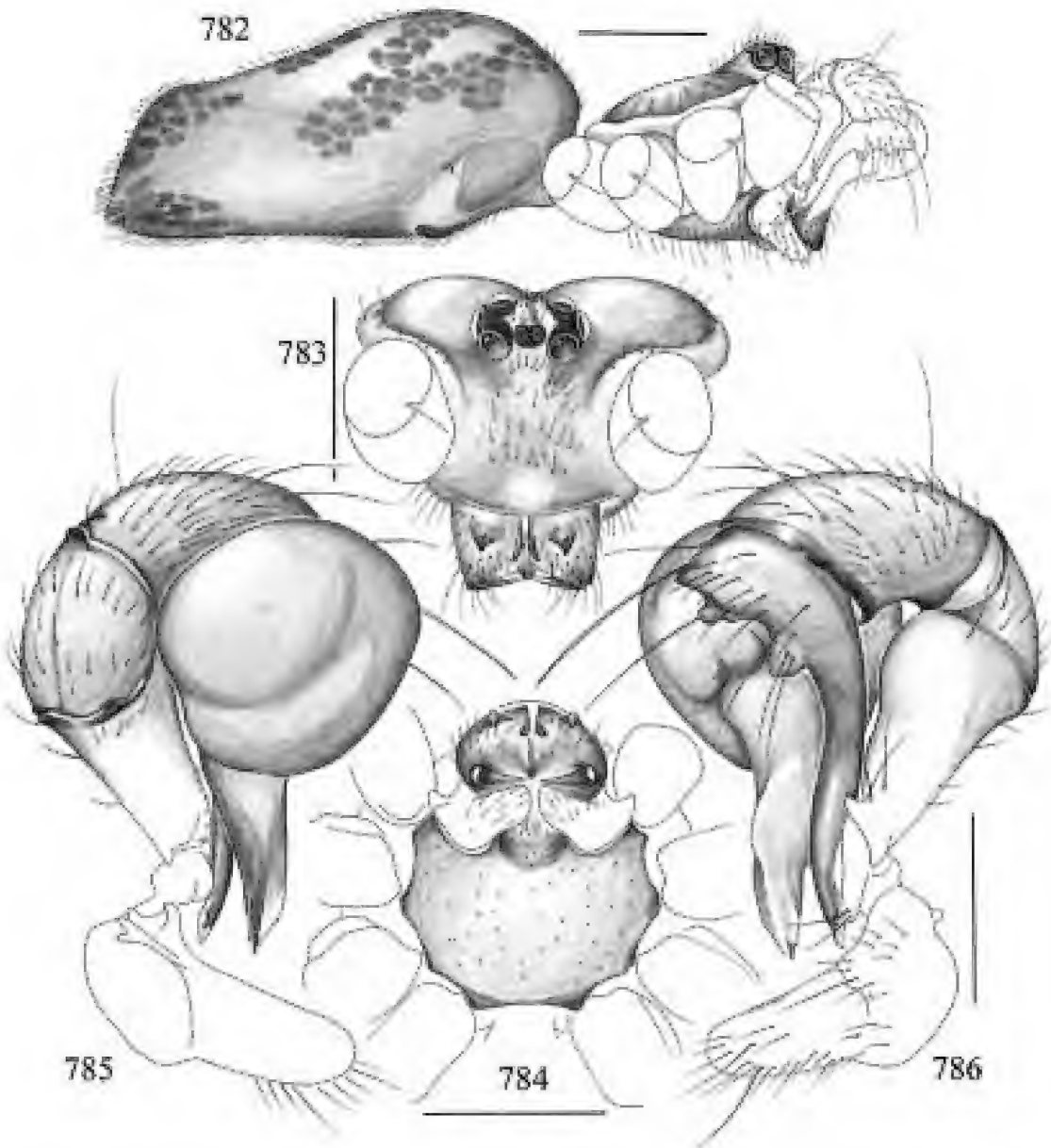
MATERIAL EXAMINED: VENEZUELA: *Monagas*: Caripe: types above; *Aragua*: Maracay, Rancho Grande, cloud forest, 1200 m elev., Aug. 1–10, 1987 (Bordan & S. Peck), 1♂ in AMNH; Rancho Grande, Mar. 22–29, 1945 (W. Beebe), 1♂ 1♀ in AMNH; Henri Pittier Nat. Park, Rancho Grande, 200–900 m elev., Feb. 18–19, 1984 (J. Coddington), 3♂ 6♀ (5 vials) in USNM; San Sebastian, Cueva el Murcielago, 500 m elev., Feb. 17, 1984 (J. Coddington), 2♀ in USNM. *Mérida*: Cueva del Pirata near Azulita (8°40′N, 71°26′W), outside cave, Jan. 28, 1984 (J. Coddington), 2♂ 2♀ in USNM. *Anzoategui*: San Tomé, Cueva del Guacharo, 1960 (T. Briceño-Maaz), 1♂ 1♀ in AMNH. TRINIDAD: Bush Bush Forest, Mar. 5, 1965 (C. B. Worth), 3♂ 6♀ in AMNH; Bush Bush Forest, Nariva Swamp, Oct. 22, 1962 and Aug. 28, 1964 (C. B. Worth), 3♂ 3♀ (2 vials) in AMNH; *St. Andrew*: Turure, Brigand Hill, July 21, 1979 (L. N. Sorkin), 1♂ in AMNH. COLOMBIA: *Meta*: 20 km N Rio Muco, "Carimagua," 175 m elev., 1978 (W. G. Eberhard), 2♂ 2♀ in UCR; same data, "voucher specimens for study of Eberhard & Briceño," 3♂ 8♀ in MCZ; *César:* "Socorpa Mission," Serra de Perijá, 1350–1400 m elev., Aug. 1–14, 1968 (B. Malkin), 4♀ 2 juveniles in AMNH; *Cordoba*: Ayapel, near Cienaga "La Cuajada," 22 m elev., Jan. 5, 1987 (M. A. Serna), 1♀ in MCZ; *Santandér*: Rio Opon, 1000 m elev., Jan. 1947 (L. Richter), 1♀ 1 juvenile in AMNH; *Cundinamarca*: Monterredondo, 1200 m elev., Feb. 25, 1975 (P. A. Schneble), 1♂ in MCZ; Monterredondo, ~ 1300 m elev., June 24, 1973 (P. A. Schneble), 1♀ in MCZ. *Boyacá*: Muzo, 1936 (J. Bequaert), 1♂, in MCZ; PERU: *Huánuco*: Tingo Maria, Cueva de las Lechuzas, May 31, 1967 (A. F. Archer), 2♂ 1♀ 1 juvenile in AMNH; BRAZIL: *Mato Grosso*: Aripuaná, forest, 1979 (W. & L. Miller), 1♂ 5♀ in MCZ.

Mesabolivar huanuco, new species

Figures 59, 183, 782–795

TYPES: Male holotype, 24♂ 9♀ paratypes from Divisoria, Dept. Huánuco, Peru; 1700 m elev., Sept. 23–Oct. 3, 1946 (F. Woytkowski), in AMNH.

ETYMOLOGY: Named for the Peruvian state

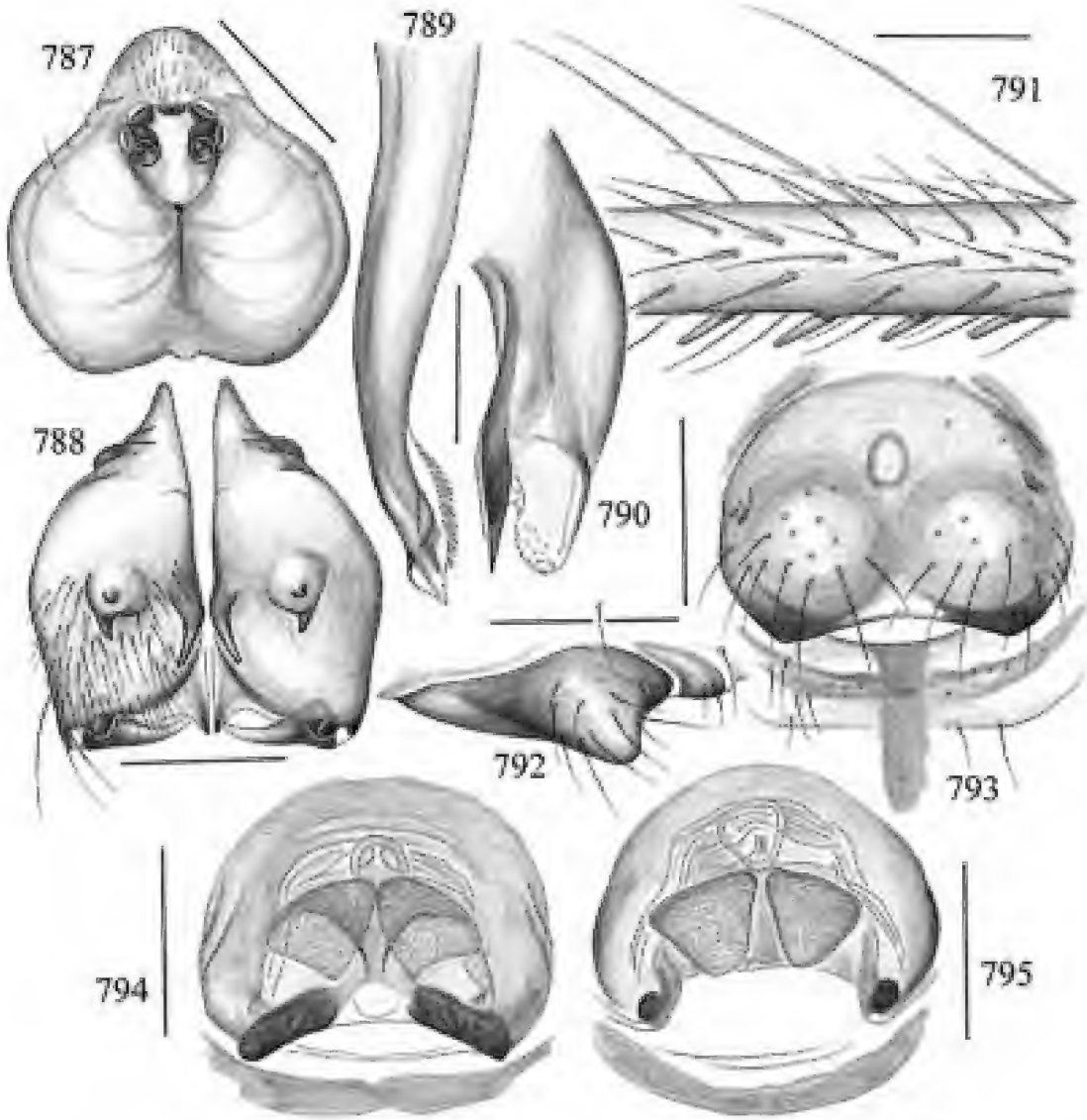


Figs. 782–786. *Mesabolivar huanuco*, n. sp., male. **782**. Habitus, lateral view. **783–784**. Prosoma, frontal and ventral views. **785**. Left palp, prolateral view. **786**. Left palp, retrolateral view. Scale lines: 1.0 mm (782–784), 0.5 mm (785–786).

Huánuco. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from close relatives (*M. eberhardi*, *aurantiacus*, *rubristernus*) by the two pairs of apophyses on the male chelicerae, one of them ending in two tips (fig. 788), the tips of procursus and bulb (figs. 789–790), and the elongated opisthosoma (fig. 782).

MALE (holotype): Total length 5.3, carapace width 2.0; leg 1: 74.8 (18.3+0.8+16.7 +35.3+3.7), tibia 2: 10.7, tibia 3: 7.6, tibia 4: 9.2; tibia 1 l/d 96. Habitus as in fig. 782; carapace and clypeus ochre-brown; eight



Figs. 787–795. *Mesabolivar huanuco*, n. sp. **787**. Male prosoma, dorsal view. **788**. Male chelicerae, frontal view. **789**. Left procursus, retrolateral view. **790**. Embolar division of left bulb, prolateral view. **791**. Male metatarsus with ventral row of spines. **792–793**. Epigynum, lateral and ventral views (female from Divisoria). **794**. Epigynum of female from Divisoria, dorsal view. **795**. Epigynum of female from Tingo Maria, dorsal view. Scale lines: 1.0 mm (787), 0.4 mm (788, 792–795), 0.2 mm (789–791).

eyes on moderately elevated ocular area (figs. 782–783); distance PME-ALE about 80% of PME diameter. Sternum bright orange, wide (fig. 784); chelicerae with two pairs of apophyses, the lateral one bifurcated (fig. 788). Palps as in figs. 785–786, procursus simple (fig. 789), bulb with pointed distal apophysis (fig. 790) and membranous dorsal element (cf. fig. 59). Tarsal organ exposed. Legs brown, coxae 1 and 4 lighter than others, femora and tibiae with light tips; spines only on metatarsi 3 (fig. 791); all legs without vertical and curved hairs; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 with over 30 pseudosegments. Opisthosoma monochromous light orange-brown (the male

in fig. 782 is a paratype), lung plates darker, dark stripe behind genital plate; gonopore without epiandrous spigots; ALS with only one piriform gland spigot each (fig. 183).

FEMALE (paratypes): Total length (N = 8) 4.0–4.4; tibia 1 (N = 19) 10.8–13.1 ($\bar{x}$ = 12.2). In general very similar to male; colors rather as in young males (see below); sternum also orange to reddish, coxae 1 and 4 lighter than others; metatarsi without spines. Epigynum simple, without median groove or pocket, with pair of brown humps on reddish plate, and brown stripe behind epigynum (figs. 792–793); dorsal view as in fig. 794. In two females, large plugs consisting of two quite distinct parts stuck in vulva.

VARIATION: Tibia 1 in 19 males: 14.1–18.3 ($\bar{x}$ = 16.4). Older(?) males had very distinct black femora and tibiae, with broad orange or red bands in the patella region and the tibia-metatarsus joint; in these males coxae 2 and 3 were also black, while coxae 1 and 4 were ochre-brown; some males had dark spots dorsally on the opisthosoma (fig. 782). Females from Tingo Maria had lower humps on the epigynum, and also differed slightly in the dorsal view of the epigynum (fig. 795; some of the differences shown may be artifacts). In males from Utcuyacu the median pair of cheliceral apophyses was not diverging as in fig. 788, but rather parallel.

DISTRIBUTION: Known from three localities in central Peru.

MATERIAL EXAMINED: PERU: *Huánuco*: Divisoria: types above; Tingo Maria, Castillo, June 2, 1967 (2 vials) (A. F. Archer & S. Risco), 2♀ 2 juveniles in AMNH; Tingo Maria, Oct. 1946–May 1947 (10 vials) (J. Pallister), 7♂ 12♀ in AMNH; Tingo Maria, Feb. 1947 (W. Weyrauch), 1♂ in AMNH; *Junin*: Utcuyacu, Feb.–Mar. 1948 (5 vials) (F. Woytkowski), 10♂ 5♀ in AMNH.

Mesabolivar rubristernus (Caporiacco, 1947), new combination

Figures 796–800

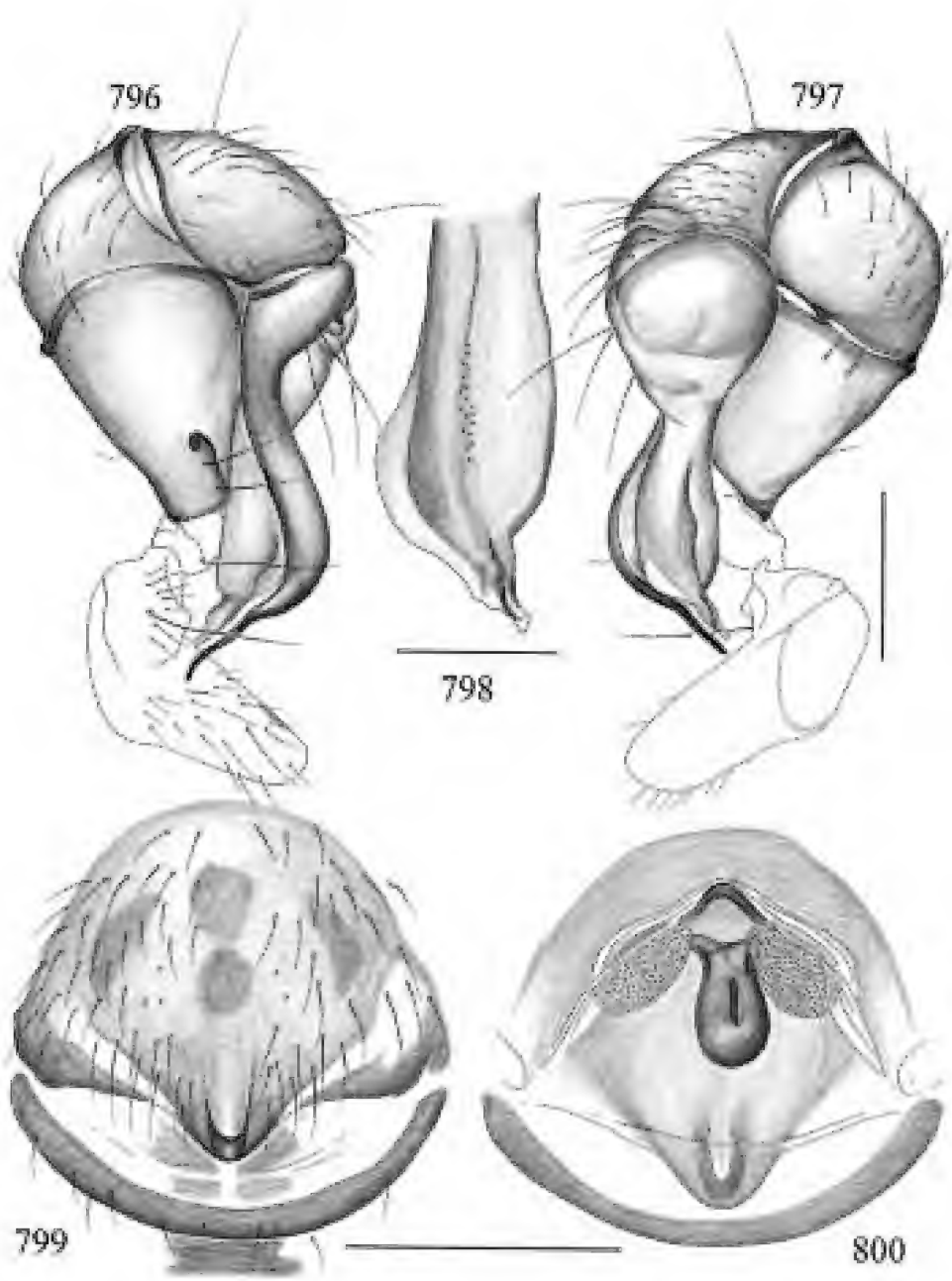
Blechroscelis rubristernus Caporiacco, 1947: 22; 1948: 627–628, figs. 19–21.

TYPES: The types could not be found in MZF, and Caporiacco (1947, 1948) gives no collection data. From the context it is clear only that the types were from Guyana, and that they were collected either in 1931 or 1936. For the following reasons I strongly believe that the material examined below is conspecific with the type material: (1) The figures of Caporiacco rather agree with the material below than with the closest known relative (*M. aurantiacus*). (2) At the end of his description, Caporiacco (1948) mentions another species, with slightly different palps and epigynum, and lists the collection data of that species. I have seen that material; it is *M. aurantiacus*.

NOTE: This species might be a junior synonym of *Pholcus cyaneus* Taczanowski, 1874, from French Guiana. I have not been able to examine the types of that species which are at the Muzeum i Instytut Zoologii PAN (Warszawa, Poland). (I have been requesting them for years, but for financial or other reasons, the shipment has always been postponed).

DIAGNOSIS: Closely related to *M. aurantiacus*, distinguished by the more slender and more S-shaped procursus (fig. 796), and by the epigynum (fig. 799; general shape, no frontal humps, short median pocket).

MALE (Baboon Camp): Total length 4.4, carapace width 1.7; leg 1: 69.9 (18.5 +0.7+16.1+31.5+3.1), tibia 2: 12.1, tibia 3: 8.7, tibia 4: 10.9; tibia 1 l/d: 89. Prosoma very similar to *M. huanuco* (cf. figs. 782–784, 787; rather than *M. aurantiacus*), light brown, with some darker radial lines and darker Y mark; distance PME-ALE about 70% of PME diameter. Sternum reddish; chelicerae as in *M. aurantiacus* (cf. fig. 807). Palps as in figs. 796–797, with distinct retrolateral coxal apophysis, femur proximally with large retrolateral apophysis, procursus strongly S-shaped, bulb with long but simple embolar division (fig. 798). Femur 3 thicker than others, light orange-brown, other femora dark brown; distal segments lighter, metatarsi yellowish; metatarsi 3 with row of spines ventrally (cf. *M. huanuco*, fig. 791); legs without vertical and curved hairs; retrolateral trichobothrium of tibia 1 at 1.4%; tarsus 1 with over 35 pseudosegments. Opisthosoma shape similar to *M. huanuco* (cf. fig. 782; rather than *M. aurantiacus*), light brown to ochre, without spots.



Figs. 796–800. *Mesabolivar rubristernus* (Caporiacco). **796**. Right palp, retrolateral view. **797**. Right palp, prolateral view. **798**. Embolar division of right bulb, prolateral view. **799**. Epigynum, ventral view. **800**. Epigynum, dorsal view. Scale lines: 0.4 mm (796–797, 799–800), 0.2 mm (798).

VARIATION: Tibia 1 in 7 other males: 15.3–18.4 ($\bar{x}$ = 16.4). Some males had a few darker spots dorsoposteriorly on the opisthosoma.

FEMALE (Baboon Camp): Tibia 1: 12.1. In general very similar to male, but metatarsi 3 without spines, opisthosoma with many dorsal dark spots. Epigynum light brown, with distinctive pocket (fig. 799); dorsal view as in fig. 800.

DISTRIBUTION: Known only from Guyana.

MATERIAL EXAMINED: GUYANA: "near Mazaruni Hd.," Pakaraima Mts, no date (C. W. Myers), 1♂ in CUC. Potaro Landing, July 28–29, 1911 (collector no given), 1♂ in AMNH. Kangaruma, Aug. 18, 1911 (F. E. Lutz), 1♂ in AMNH. Kaietur, July 29, 1911 (collector not given), 2♂ 1♀ in MZF. Kaietur, Aug. 4, 1911 (F. E. Lutz), 2♂ in AMNH. Kaietur, Aug. 1, 1911 (W. G. Hassler), 1♂ in AMNH. Takutu Mts (6°15′N, 59°05′W), Dec. 6, 1983 (P. J. Spangler & R. A. Faitoute), 1♂ in USNM. "Campo I, Baboon Camp," Oct. 1931 (Beccari), 3♂ 1♀ in MZF. Kartabo (6°23′N, 58°42′W), Tropical Research Station, Feb. 11, 1921 (no collector given), 1♂ in AMNH. Kartabo, 1924 (no collector given), 1♂ in AMNH. "Anundabaru," 2000 ft elev., Jan. 22, 1928 (no collector given), 1♂ in AMNH. "Minnehaha Creek," Sept. 1913 (collector not given), 1♂ in AMNH. "Tukeit" (Tukeit Fall: 5°12′N, 59°26′W), July 25, 1911 (F. E. Lutz), 5♂ 2♀ in AMNH.

Mesabolivar aurantiacus (Mello-Leitão, 1930), new combination

Figures 42–43, 81, 801–810

Blechroscelis aurantiacus Mello-Leitão, 1930: 61, fig. 13.

Blechroscelis irroratus Mello-Leitão, 1947b: 160–161, figs. 4–5 (?; see below). NEW SYNONYMY.

Blechroscelis virescens Mello-Leitão, 1947b: 161, fig. 6. NEW SYNONYMY.

Psilochorus cambridgei Mello-Leitão, 1947b: 163 (name preoccupied: Gertsch and Davis, 1937).

Psilochorus browningi Roewer, 1951: 455 (replacement name for *Psilochorus cambridgei* Mello-Leitão, 1947). NEW SYNONYMY.

JUSTIFICATION OF SYNONYMIES: The list above implies that one species was described under three different names in a single paper. Three factors seem to have worked together to create a probably unresolvable chaos concerning the junior synonyms: (1) careless original descriptions; (2) confusion of figures; (3) the loss and/or probable confusion of types.

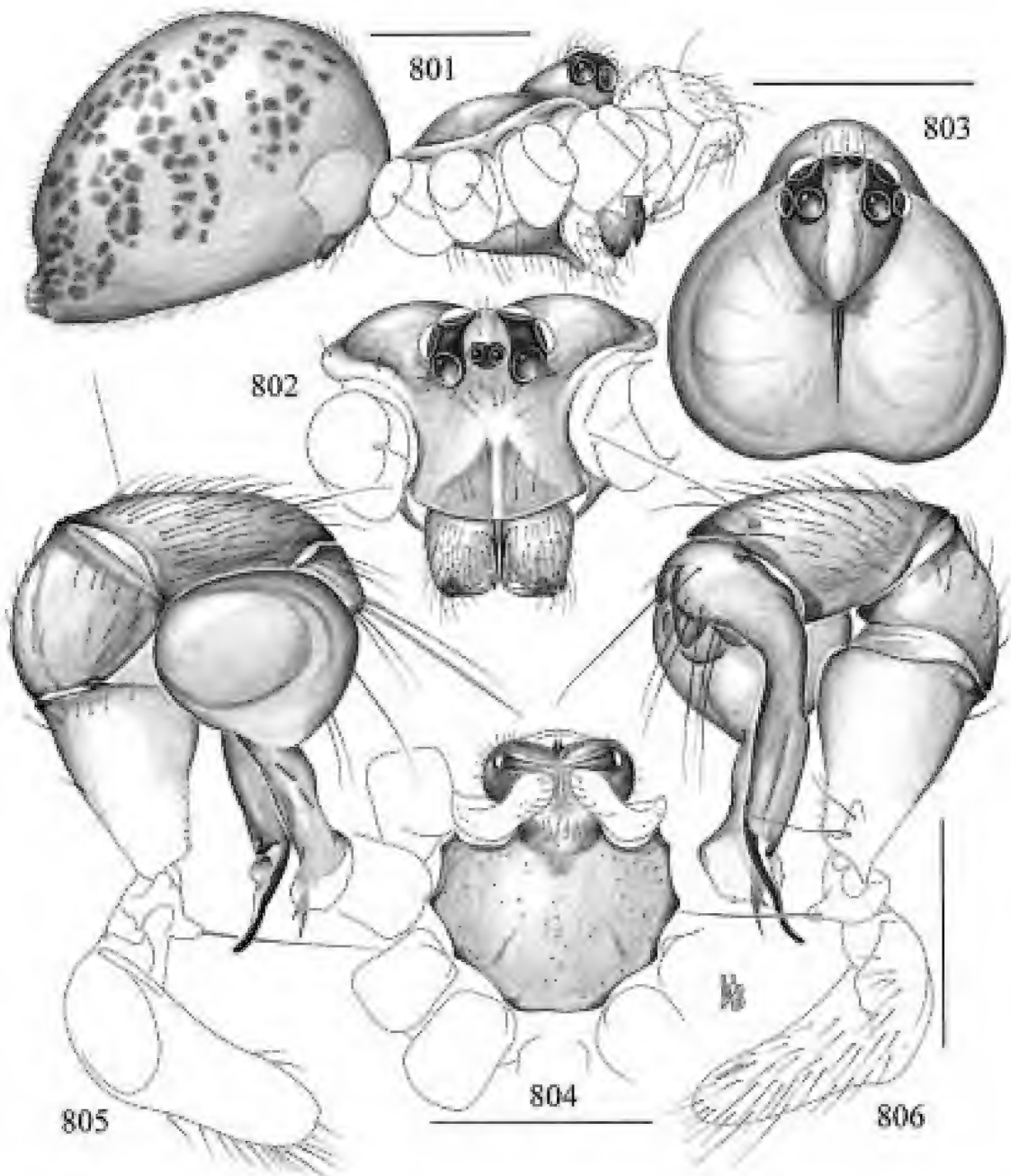
First, the vial with *Blechroscelis irroratus* contains only a female, while also the male was originally described. Mello-Leitão's (1947b) figure of the epigynum does not correspond with the specimen in the vial, which has a long groove in the epigynum, as shown in fig. 808. Such an epigynum with groove is illustrated in Mello-Leitão's fig. 2, for *Blechroscelis* (not *Psilochorus*!) *cambridgei*, a species that lacks a groove (see fig. 901)!

Second, the vial labeled with *Blechroscelis virescens* contains a male of the present species, but several lines of indirect evidence point to the possibility that this specimen might be the missing male of *B. irroratus* rather than the originally described specimen. The label says "*Blechroscelis virescens* (Tacz.)," but Taczanowski never described such a species, only a *B. cyanea* (originally *Pholcus cyaneus*) (note that "virescens" = greenish, and "cyaneus" = blue, are semantically quite related). Mello-Leitão's figure corresponds much more to *B. rubristernus* (which I suspect is a synonym of *Pholcus cyaneus*) than to the specimen in the vial, and I assume that Mello-Leitão originally wanted to redescribe Taczanowski's species (with which he considered himself familiar: Mello-Leitão, 1940d), and just confused the name.

Third, *Psilochorus cambridgei* is the only species in Mello-Leitão's (1947b) paper that is described without figures, in fact without any reference to morphology, but only with description of the coloration. I suspect that Mello-Leitão realized at some point during the preparation of the manuscript (after noting down the colors, before noting down morphology) that he was creating a synonym, but that the rudimentary description somehow nevertheless made its way into the final paper.

In sum, *Blechroscelis irroratus* and *Psilochorus cambridgei* Mello-Leitão (and its replacement name *P. browningi*) seem to be synonyms of *Blechroscelis aurantiacus*, while *Blechroscelis virescens* might rather be a synonym of *Blechroscelis rubristernus* (= *cyaneus*?!), although the specimen in the vial is also *Blechroscelis aurantiacus*.

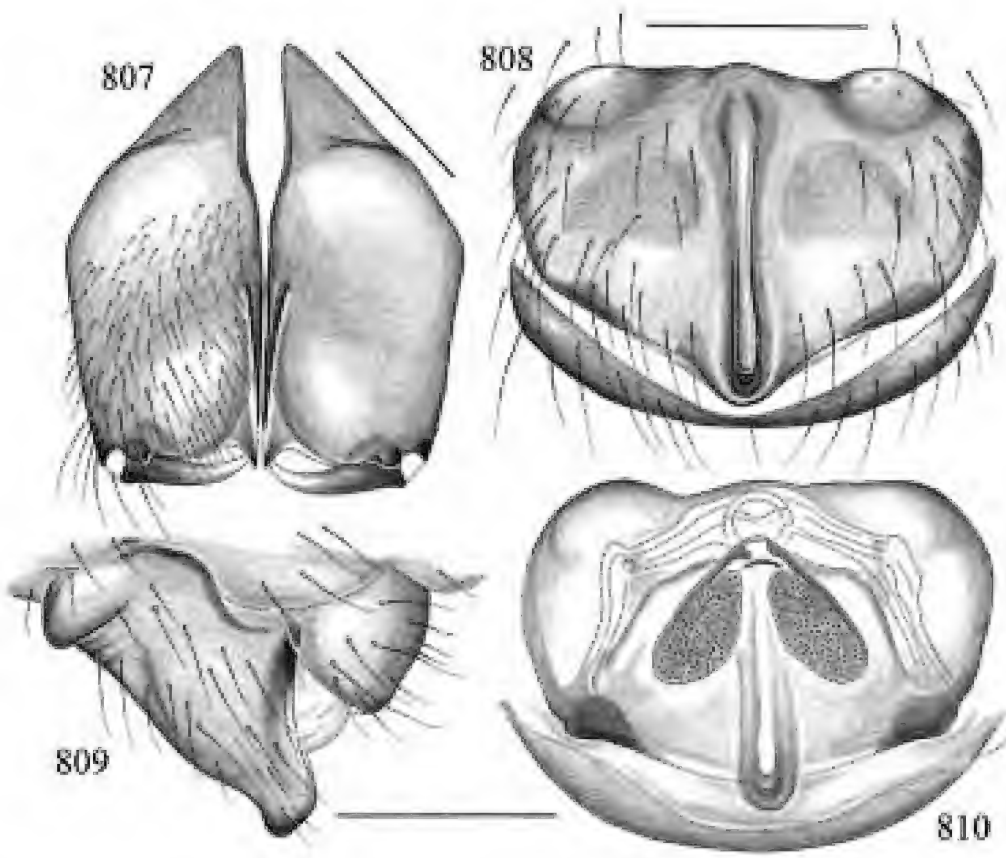
TYPES: *Blechroscelis aurantiacus:* 2♂ syntypes from Cuminá, Pará, Brazil; date and collector not given, in MNRJ, examined. *Blechroscelis irroratus*: 1♀ type from Breves, Pará, Brazil, no date (F. O. Pickard-Cambridge), in BMNH (1897.9.21 501-508), examined. *Blechroscelis virescens*: 1♂ type



Figs. 801–806. *Mesabolivar aurantiacus* (Mello-Leitão), male. **801**. Habitus, lateral view. **802–804**. Prosoma, frontal, dorsal, and ventral views. **805**. Left palp, prolateral view. **806**. Left palp, retrolateral view. Scale lines: 1.0 mm (801–804), 0.5 mm (805–806).

from Higher Potaro River, Guyana, no date (R. Lloyd?; this name is on the label, but Mello-Leitão gives T. T. Quelch as collector), in BMNH (1897.8.5.3.8), examined. *Psilochorus browningi:* 1♀ type from Breves, Pará, Brazil, no date, in BMNH (1897.9.20 501-508), examined.

DIAGNOSIS: Distinguished from *M. rubris-*

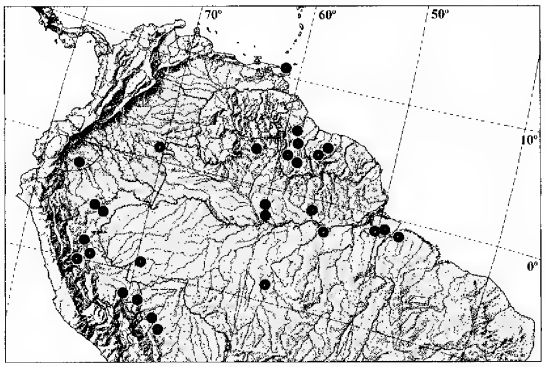


Figs. 807–810. *Mesabolivar aurantiacus* (Mello-Leitão). **807**. Male chelicerae, frontal view. **808–809**. Epigynum, ventral and lateral views. **810**. Epigynum, dorsal view. Scale lines: 0.3 mm.

ternus by the procursus (less S-shaped, fig. 806), and the epigynum (long median groove, general shape, fig. 808), from *M. huanuco* by the chelicerae (one pair of pointed contiguous apophyses, fig. 807), and the epigynum with median groove and pocket (fig. 808).

MALE (Cabo Frio): Total length 3.9, carapace width 1.4; leg 1: 67.9 (16.9+0.7 +15.6+31.3+3.3), tibia 2: 10.9, tibia 3: 8.3, tibia 4: 10.7; tibia 1 l/d: 110. Habitus as in fig. 801; carapace light brown, with slightly darker brown pattern (fig. 803), ocular area slightly elevated (figs. 801–802), slightly darker laterally; distance PME-ALE about 65% of PME diameter. Clypeus light brown; sternum light brown to orange, wide (fig. 804); chelicerae light brown with pair of long, contiguous apophyses (fig. 807). Palps as in figs. 805–806, with distinct retrolateral coxal apophysis, femur proximally with retrolateral apophysis, procursus slightly S-shaped, ending in distinct black spine (fig. 806; see also figs. 42–43). Tarsal organ exposed (fig. 81). Legs light brown, femora and tibiae with light tips; femora 3 slightly thicker than others; metatarsi 3 only with row of spines ventrally (cf. *M. huanuco*, fig. 791); legs without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 with over 35 pseudosegments. Opisthosoma oval, pointed posteriorly, greenish-gray with many dark spots in groups dorsally (fig. 801); lung plates and rectangular genital plate light brown; gonopore without epiandrous spigots; ALS with only one piriform gland spigot each.

VARIATION: Carapace width in *Blechroscelis aurantiacus* syntypes: 1.6, 1.9; tibia 1 in 26 males (various localities): 12.4–18.1 ($\bar{x}$ = 15.9). In some males the legs are much darker, the proximal segments almost black;



Map 6. Known distribution of *Mesabolivar aurantiacus* (Mello-Leitão).

but also in these, femora 3 are not darkened. Femora 3 are sometimes hardly thicker than the others; in other males the difference is conspicuous. Opisthosoma sometimes without spots.

FEMALE (Manaus Reserves): Tibia 1 (N = 9) 9.1–11.1 ($\bar{x}$ = 10.5). In general very similar to male, but metatarsi without spines, and legs never black. Epigynum light brown, with characteristic long groove, anteriorly either flat or with rounded or pointed humps (figs. 808–809 show an epigynum with rounded humps); dorsal view as in fig. 810.

DISTRIBUTION: Known from Brazil (Amazonas, Pará, Mato Grosso, Acre), Surinam, Guyana, Trinidad, Colombia, Ecuador, Peru, and Bolivia (map 6).

MATERIAL EXAMINED: BRAZIL: *Amazonas*: Manaus: Reserva Ducke, Aug. 17–24, 1991, and Aug. 6–9, 1992 (2 vials) (A. D. Brescovit), 6♂ 7♀ in MCN; same locality, Aug. 3, 1987 (A. A. Lise), 3♂ 1♀ in MCN; same locality, Feb. 20, 1992 (A. A. Lise), 14♂ 3♀ in MCP (1683); same locality, Mar. 25, 1992 and June 10, 1992 (S. Darwich), 3♂ 1♀ in MCP (2723, 2847); same locality, Nov. 8, 1991 (S. Magni), 1♂ 1♀ in MCP (1434); Manaus, Solimoes, Dec. 16–17, 1987 (E. H. Buckup), 1♀ in MCN; Manaus: Cabo Frio Reserve, 1989–1992 (12 vials) (H. G. Fowler, E. N. Vincticinque, C. Vieira), 11♂ 6♀ in MCZ; Manaus, Colosso Reserve, Feb. 27–Sept. 7, 1989 (8 vials) (H. G. Fowler, E. N. Vincticinque, C. Vieira), 7♂ 3♀ 1 juvenile in MCZ; Manaus, Porto Alegre, 1989–1992 (3 vials) (H. G. Fowler), 3♂ in MCZ; Manaus, 80 km N city of Manaus, Sept. 23, 1989 (H. G. Fowler), 1♂ in MCZ; Manaus, "km 41 Reserve," 1989–1992 (3 vials) (H. G. Fowler), 3♀ in MCZ; Manaus, Dimona Reserve, 1989–1992 (2 vials) (H. G. Fowler), 2♂ in MCZ; Morro dos Seis Lagos, São Gabriel da Cachoeira (8°33′S, 58°21′W), Sept. 30, 1990 (A. A. Lise), 1♂ in MCP (7207). *Pará*: Cuminá: syntypes of *B. aurantiacus* above; Breves: types of *B. irroratus* and *P. browningi* above; Caxiunã, Melgaço, Aug. 11, 1996 (A. A. Lise "et al."), 2♂ 2♀ in MCP (9423–26); Santarém, Fátima de Uricurituba, Jan. 24, 1994 (A. D. Brescovit), 2♂ in MCN; Santarém Forest, no date (F. O. Pickard-Cambridge), 7♂ 5♀ in BMNH (*Blechroscelis cambridgei* paratypes); Belém, July 1971 (T. McGrath), 1♂ in MCZ; Belém, Utinga, Nov. 10/21, 1963 (Oliveira & P. Wygodzinski), 1♂ in AMNH; Breves, no date (F. O. Pickard-Cambridge), 1♂ in BMNH (*Blechroscelis cambridgei* paratype); "Pará," July 1911 (Stanford Expedition), 1♂ in MCZ; "Lower Amazonas," no date (F. O. Pickard-Cambridge) 1♂ in BMNH (*Blechroscelis cambridgei* paratype). *Roraima*: Ilha de Maracá, Jan. 31–Feb. 14, 1992 (A. B. Bonaldo), 1♀ in MCP (1850). *Mato Grosso*: "Villa Murtinho," Mar. 28–Apr. 3, 1922 (J. H. Williams, J. W. Strohm), 2♂ 1♀ (2 vials), in MCZ; *Acre*: Rio Purus NW of Sena Madureira, Seringal Santo Antonio (above Manuel Urbana), Sept. 15–18, 1973 (B. Patterson), 1♂ in MCZ. SURINAM: Brownsberg, Sept. 16, 1938 (Gerikes), 1♂ in AMNH; Brownsberg, Brokopondo Prov. (5°00′N, 55°27′W), Feb. 20, 1982 (D. Smith), 1♀ in MCZ; Kaiserberg, airstrip, Zuid River, 900 ft elev., 1960–1962 (H. A. Beatty) 2♂ in FMNH. GUYANA: Higher Potaro River: type of *B. virescens* above; Canje Ikuruwa River (Forest Savanna), Aug.–Dec. 1961 (3 vials) (G. Brentley), 4♂ 3♀ 3 juveniles in AMNH; Essequibo River opposite Twasinki Mts, Sept. 25, 1937 (W. G. Hassler), 1♂ in AMNH; Two Mouths (Essequibo), July 9, 1936 (Romiti), 1♂ 4♀ in MZF; Waratilla Creek, Apr. 29, 1936 (collector not given), 1♂ in MZF; Tumaturai, Sept. 19, 1936 (Romiti), 5♂ 2♀ in MZF; Itamyaruma (Essequibo), July 29, 1936 (Romiti), 1♂ 3♀ in MZF; Sand Wall, Apr. 17, 1936, 1♂ in MZF. TRINIDAD: Port of Spain, 1913 (R. Thaxter), 1♂ in MCZ; Sim-

la, Arima Valley, Apr. 12–26, 1964 (4 vials) (A. M. Chickering), 4♂ 8♀ in AMNH; Arima Valley, 2000 ft elev., Feb. 1972 (J.A.L. Cooke), 1♂ in AMNH; St. George County, Arima, Spring Hill ("web, roadside mud embankment with depression"), July 22, 1979 (L. N. Sorkin), 1♂ in AMNH; Simla Research Station and Asa Wright Nature Center, Feb. 1–2, 1984 (J. Coddington), 3♂ 1♀ (3 vials) in USNM; Navy Base, southwest Trinidad, Oct. 1944 (2 vials) (R. Ingle), 3♂ 2♀ in AMNH. COLOMBIA: Comissaría del Vaupés: Mitú (1°08′N, 70°03′W), July 9–15, 1990 (L. E. Peña), 1♂ in AMNH; Rio Suarez, 800–1000 m elev., Aug. 11–17, 1946 (collector not given), 1♂ (and a female prosoma) in AMNH. ECUADOR: *Pastaza:* Cusuimi (Cushueme), on Rio Cusuimi, 150 km SE Puyo, 320 m elev., Apr. 1–5, and May 15–31, 1971 (B. Malkin), 18♂ 7♀ (4 vials) in FMNH. PERU: *Loreto*: Rio Samiria (4°43′S, 74°18′W), May 11–18, 1990 (D. Silva), 1♂ in MUSM; same locality, May–June 1990 (T. Erwin "et al."), ~ 6♂ 10♀ (2 vials) in MUSM; Henaro Herrera (4°55′S, 73°45′W), ~ 100 m elev., Aug. 24, 1988 (D. Silva), 2♀ in MUSM; Yagua Indian village, headwaters of Rio Loreto-Yucu, Apr. 22–May 2, 1970 (B. Malkin), 1♂ in FMNH; Ucayali, Pacullpa, Ivita, Rio Neshuya, July 19, 1986 (D. Silva) 1♀ in MUSM; Ucayali, Pacullpa: Bosque Nacional Alexander von Humboldt, July 30, 1986 (D. Silva) 2♂ 3♀ 1 juvenile in MUSM; *Pasco:* Huancabamba, Quebrada Castillo, NW Iscozacin (10°10′S, 75°15′W), 345 m elev., Sept. 10, 1988 (D. Silva), 3♂ in MUSM; *Huánuco*: Dantas-La Molina, SW Puerto Inca (9°38′S, 75°00′W), 270 m elev., May 19 and 27, 1987 (D. Silva), 3♂ 1♀ (2 vials) in MUSM; *Madre de Dios*: 15 km E Puerto Maldonado (12°33′S, 69°03′W), 200 m elev., Feb. 24–Mar. 2, 1990 (D. Silva), 2♂ 2♀ in MUSM; Zona Reservada Tambopata, June 9, 1988 (J. Coddington), 2♂ (2 vials) in USNM; same locality, Oct. 31–Nov. 6, 1986 (A. Rypstra), 1♀ in USNM; Zona Reservada Pakitza (11°56′S, 71°17′W), 356 m elev., May 9, 1991 (D. Silva), 1♀ in MUSM; same locality, May 1–6 and Oct. 1–9, 1991 (D. Silva), 4♂ 4♀ (3 vials) in USNM; same locality, Sept. 28–Oct. 9, 1987 (D. Silva & J. Coddington), 7♂ 7♀ (9 vials) in USNM. BOLIVIA: *La Paz*: Alto Beni, Sapecho, Aug. 1993 (H. Höfer), 1♂ 1♀ in MCN; *Beni:* 16.8 mi SW Yucumo (~ 15°23′S, 66°59′W), ~ 500 m elev., Nov. 15–19, 1989 (J. Coddington, C. Griswold, D. Silva, S. Larcher, E. Peñaranda), 3♂ 1♀ (3 vials) in USNM.

Mesabolivar cyaneomaculatus (Keyserling, 1891), new combination

Figures 811–819

Pholcus cyaneo-maculatus Keyserling, 1891: 173–175, pl. 5: figs. 119a–d.

Blechroscelis cyaneo-maculatus / -a: Moenkhaus, 1898: 100–101. – Mello-Leitão, 1918: 107–108. (Both authors simply translated Keyserling's original description, adding no new information).

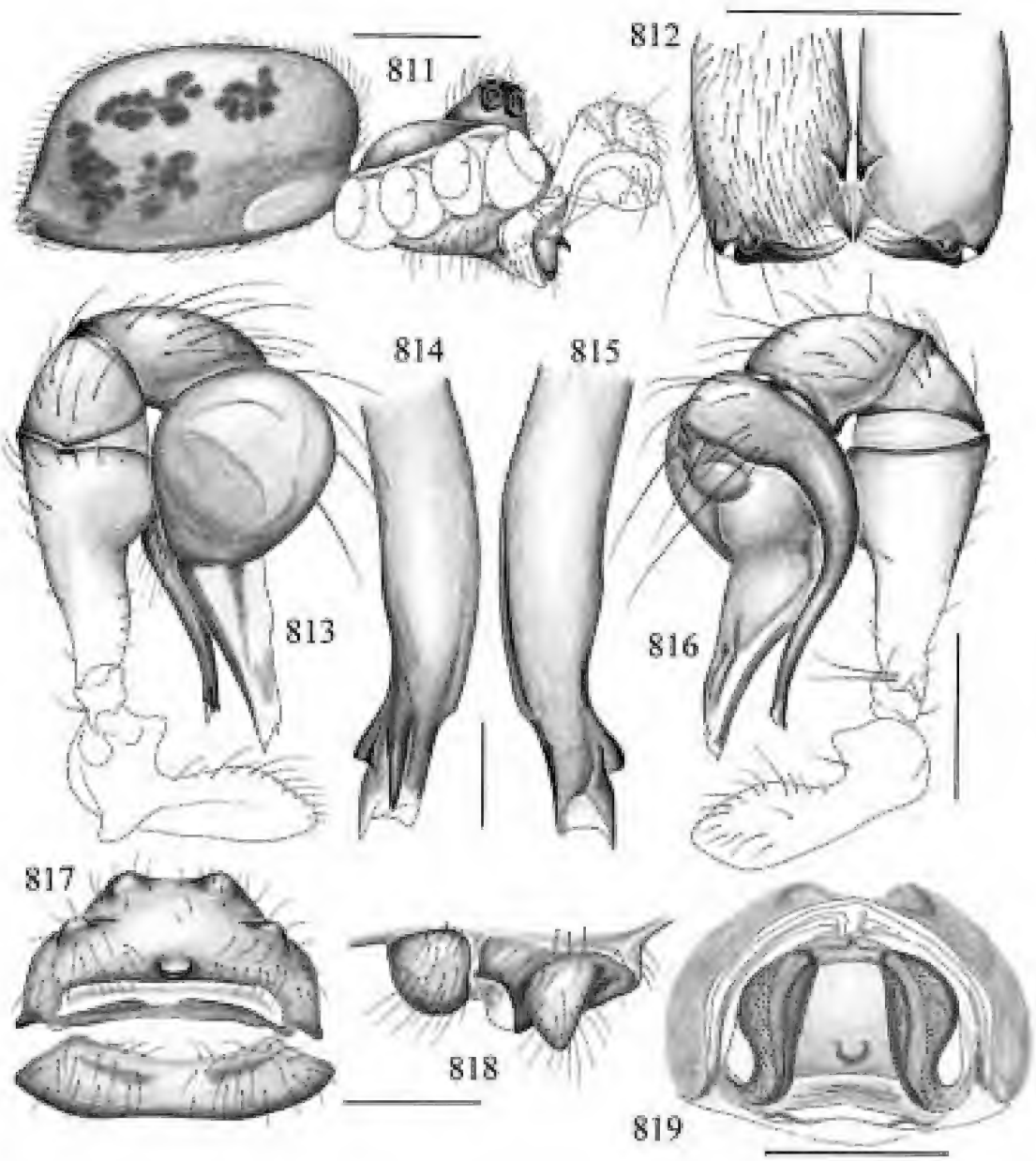
Psilochorus cyaneomaculatus: Mello-Leitão, 1943: 155; 1947a: 2 (new records only).

Blechroscelis cyaneomaculatus: Mello-Leitão, 1947c: 233 (new records only).

TYPES: One male and one female syntypes from Rio de Janeiro, no date (E. A. Göldi), in BMNH (1890.7.1.8325-7), examined. (I have not seen Keyserling's (1891) second male and second female.)

DIAGNOSIS: Distinguished from close relatives (*M. botocudo*, *maxacali*, *iguazu*) by the single pair of frontal apophyses on the male chelicerae (fig. 812); from these and *M. brasiliensis* also by the shape of the epigynum and the posterior pocket (figs. 817–818).

MALE (syntype): Measurements copied from Keyserling (my measurements gave only slightly different values, and all legs are loose): Total length 4.3, carapace width 1.7; leg 1 and 2 missing, tibia 3: 8.3, tibia 4: 10.3. Habitus as in fig. 811; prosoma shape similar to *M. togatus* (cf. figs. 852–854); distance PME-ALE about 85% of PME diameter. Carapace brown, darker medially, ocular area also dark brown, clypeus brown, sternum orange brown. Chelicerae brown with only one pair of black frontal apophyses (fig. 812). Palps as in figs. 813, 816; procursus closely resembling *M. botocudo* and *maxacali*, but with longer prolateral apophysis (compare fig. 814 with figs. 872, 879). Legs light brown, tips of femora and tibiae light. Opisthosoma greenish-



Figs. 811–819. *Mesabolivar cyaneomaculatus* (Keyserling). **811**. Male habitus, lateral view. **812**. Male chelicerae, frontal view. **813**. Left palp, prolateral view. **814**. Tip of left procursus, prolateral view. **815**. Tip of left procursus, retrolateral view. **816**. Left palp, retrolateral view. **817–818**. Epigynum, ventral and lateral views. **819**. Epigynum, dorsal view. Scale lines: 1.0 mm (811), 0.5 mm (812–813, 816–819), 0.1 mm (814–815).

brown, dorsally with blackish spots, genital plate light brown.

The following data are from a male from Teresópolis, Rio de Janeiro: Carapace width 1.8; leg 1: 62.0 (14.8+0.7+14.8+28.1+3.6), tibia 2: 10.3, tibia 3: 6.7, tibia 4: 9.6; tibia 1 l/d: 86. Femora 2 and 3 thicker than others; legs without spines, without curved and ver-

tical hairs; retrolateral trichobothrium of tibia 1 at 1.8%; tarsus 1 with over 30 pseudosegments.

VARIATION: Tibia 1 in two males from Pico da Tijuca, Rio de Janeiro: 16.1, 16.8.

FEMALE (syntype): Carapace width 1.7; tibia 1: 13.5. In general very similar to male. Epigynum with pair of apophyses, and small pocket at rear side of frontal plate (figs. 817–818); internal genitalia with pair of pore plates forming part of lateral walls of copulatory pouch (fig. 819).

DISTRIBUTION: Mello-Leitão (1943, 1947a, c) gives Rio de Janeiro, São Paulo, Rio Grande do Sul, Paraná, and Pernambuco as known distribution (1947a: 2: "comum desde Pernambuco até o Rio Grande do Sul"). I have only seen material from Rio de Janeiro.

MATERIAL EXAMINED: BRAZIL: *Rio de Janeiro*: not further specified: types above; Guanabara, Pico da Tijuca, 500–950 m elev., in forest, Apr. 17, 1965 (H. Levi), 2♂ in MCZ; Teresópolis, 900–1100 m elev., Nov. 7–9, 1945 (H. Sick), 1♂ 1♀ in AMNH.

Mesabolivar spinulosus (Mello-Leitão, 1939), new combination

Figures 820–825

Blechroscelis spinulosus Mello-Leitão, 1939: 173.

TYPES: Male lectotype and 1♀ paralectotype (designated herein) from Soledade, Paraíba, Brazil; no date (R. von Ihering), in MNRJ (58365), examined.

DIAGNOSIS: Easily distinguished from most known congeners by the many short spines on the femora and tibiae of the male; *M. cambridgei* has similar spines, but a different procursus and a flat epigynum; distinguished from the similar *M. cyaneomaculatus* also by the shape of the procursus (figs. 820–822); from other close relatives (*M. botocudo*, *maxacali*, *iguazu*) also by the single pair of frontal apophyses on the male chelicerae; from these and *M. brasiliensis* also by the shape of the epigynum and the posterior pocket (fig. 824).

MALE (lectotype): Total length 5.0; carapace width 1.9; legs (only femora 2–4 were still attached to the body): femora: 15.2(?), 11.6, 10.9, 11.9. Habitus and prosoma shape similar to *M. cyaneomaculatus* and *togatus* (cf. figs. 811, 851–854); distance PME-ALE about 100% of PME diameter. Carapace ochre, with brown median mark that radiates toward lateral margins; ocular area brown, clypeus ochre, sternum pale ochre. Chelicerae ochre with only one pair of black frontal apophyses, almost identical to *M. cyaneomaculatus* (cf. fig. 812), but apophyses slightly shorter in lateral view. Palp in general very similar to *M. cyaneomaculatus* (cf. figs. 813, 816), procursus tip distinctive (figs. 820–822). Legs ochre-brown, without curved and vertical hairs; all femora with many short spines in several rows, more or less evenly spread over segment (most on prolateral and ventral sides), tibiae with similar spines concentrated ventrally; tarsus 4(?) with ~ 25 pseudosegments; retrolateral trichobothrium of tibia 2(?) at 2.5%. Opisthosoma monochromous grayish-ochre, shape as in *M. cyaneomaculatus* (cf. fig. 811).

FEMALE (paralectotype): Carapace width 1.6; leg 3 (the only leg still attached): 24.2 (7.3+0.6+5.9+9.3+1.1). In general very similar to male, but apparently without spines on legs (loose legs that appear to be from female also have no spines). Epigynum light brown, posteriorly protruding with pocket, anteriorly pair of humps (fig. 824); internal genitalia as in fig. 825.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BRAZIL: *Paraíba:* types above.

Mesabolivar ceruleiventris (Mello-Leitão, 1916), new combination

Figures 826–827

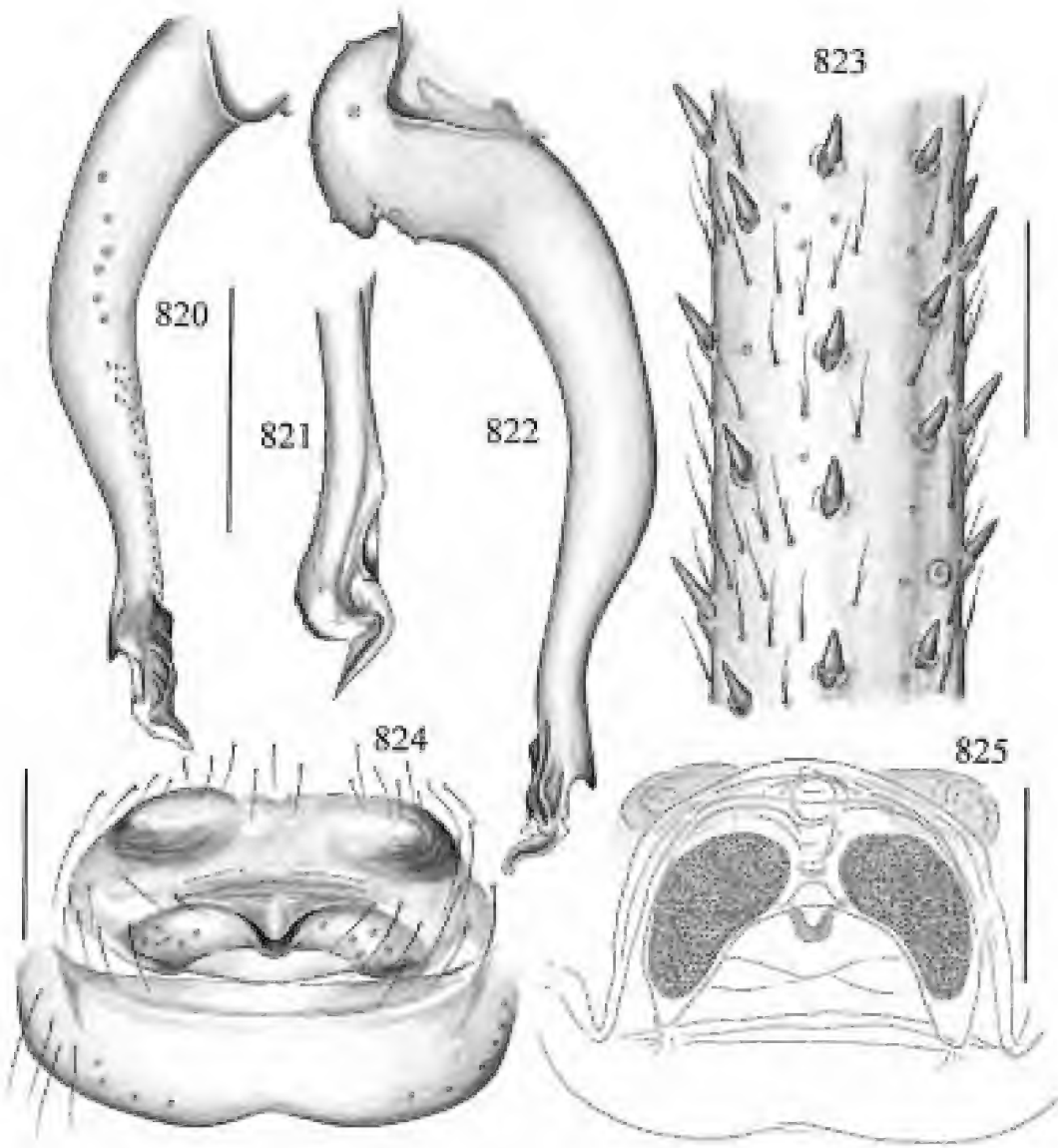
Psilochorus ceruleiventris Mello-Leitão, 1916: 12–13. – Mello-Leitão, 1918: 97–98 (copy of original description).

Psilochorus coeruleiventris: Roewer, 1942: 350: unjustified emendation.

Psilochorus cæruleiventris: Bonnet, 1958: 3822: unjustified emendation.

TYPE: Female holotype (only the opisthosoma and parts of one leg are left) from Espírito Santo, Brazil; date and collector not given, in MNRJ (851), examined.

DIAGNOSIS: Distinguished from similar



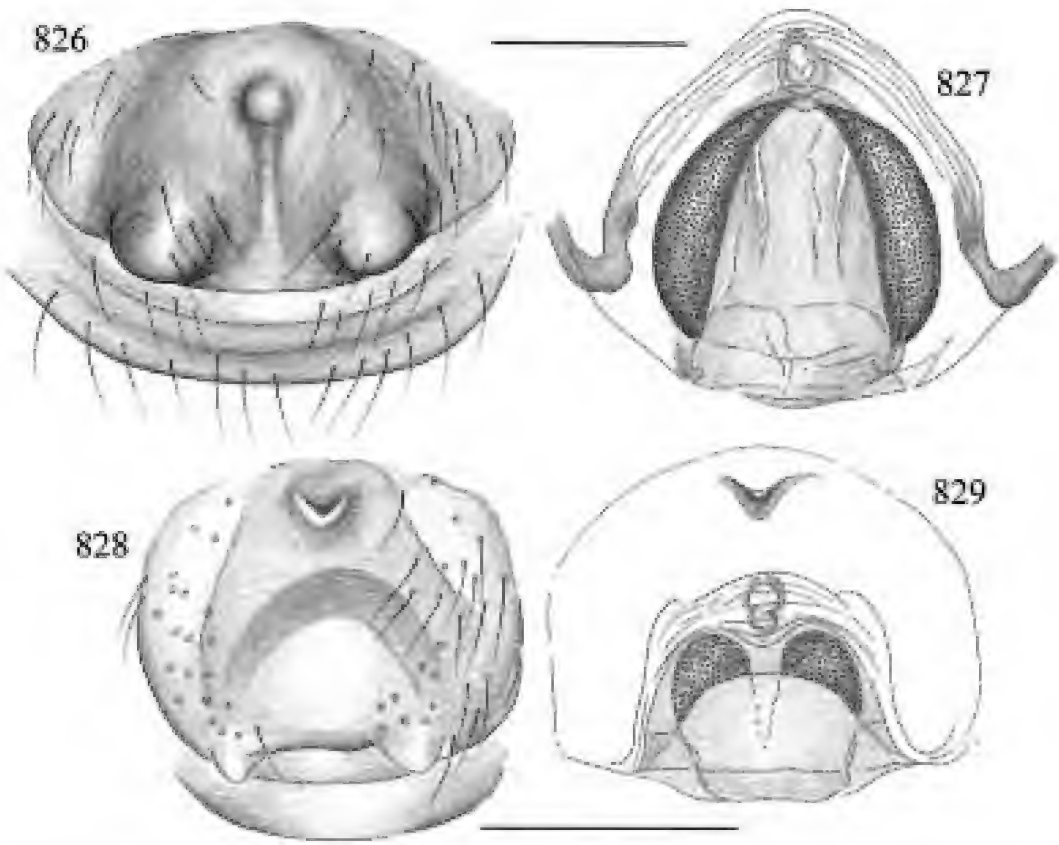
Figs. 820–825. *Mesabolivar spinulosus* (Mello-Leitão), male lectotype and female paralectotype. **820**. Left procursus, prolateral view. **821**. Left procursus tip, ~ dorsal view. **822**. Left procursus with cymbium, retrolateral view. **823**. Male femur 1 at ~ 4/5, prolateral view. **824**. Epigynum, ventral view. **825**. Epigynum, dorsal view. Scale lines: 0.3 mm.

congeners (e.g., *M. cyaneomaculatus*, *botocudo*, *maxacali*, *iguazu*) by the shape of the epigynum with the anterior pocket and posterior apophyses (fig. 826).

MALE: Unknown.

FEMALE: Judging from Mello-Leitão's (1916) original description, this spider is probably similar to most southeast-Brazilian representatives of *Mesabolivar*, with a habitus comparable to those shown in figs. 811, 851; total length is given as 4 mm.

The shape of the opisthosoma is like that of *M. cyaneomaculatus* or *togatus* (cf. figs. 811, 851); length 2.4. It is now monochromous dark gray, but was originally "azul-esverdeado com manchas azues escuras, grandes, em duas series parallelas, no dorso." Epigynum brown, with anterior pocket and



Figs. 826–829. *Mesabolivar* spp. 826–827. *M. ceruleiventris* (Mello-Leitão), female holotype. **826**. Epigynum, ventral view. **827**. Epigynum, dorsal view. 828–829. *M. tandilicus* (Mello-Leitão), female syntype. **828**. Epigynum, ventral view. **829**. Epigynum, dorsal view. Scale lines: 0.3 mm.

posterior apophyses (fig. 826); dorsal view as in fig. 827. Segments of accompanying leg: tibia: 9.3, metatarsus: 14.6, tarsus: 1.9 (which is comparable to the first leg of close relatives); tarsus of this leg with ~ 25 pseudosegments.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BRAZIL: *Espírito Santo*: type above.

Mesabolivar tandilicus (Mello-Leitão, 1940), new combination

Figures 828–829

Litoporus tandilicus Mello-Leitão, 1940b: 9–10, figs. 10–12; 1944b: 312.

TYPES: Two females (one without epigynum) and one male (without chelicerae and palps!) from Tandil, Prov. Buenos Aires, Argentina; Dec. 1938 (M. Birabén), in MLP (14275), examined.

NOTES: Mello-Leitão (1940b) writes "Tipo y alotipo ♂ : n^{os} 14.275 y 14.276; . . .," suggesting that he is talking about a female holotype and a male allotype, each in a separate vial. In agreement with this, the label in vial 14275 reads "*Litoporus tandilicus* Typus," i.e., singular. However, vial 14275 now contains two females and one male, and the location of vial 14276 is unknown. Possibly the contents of the two vials were combined at some point (at this time the detached palps and chelicerae of the male were probably lost).

DIAGNOSIS: Distinguished from congeners of the southern group of species (see p. 191) by the shape of the epigynum (a pair of posterior apophyses and a shallow anterior in-

dentation: fig. 828), and apparently by the cheliceral apophyses (facing upward, similar in lateral view to *M. togatus*: fig. 851; cf. fig. 11 in Mello-Leitão, 1940b).

MALE: Habitus as in female (see below). According to Mello-Leitão (1940b), the male chelicerae are provided proximally with pair of pointed, upward facing apophyses (cf. his fig. 11); his drawing of the male palp (fig. 12) is unfortunately from the prolateral side, i.e., the procursus is not shown.

FEMALE (type specimen with epigynum): Total length 2.2; carapace width 0.8; leg 1: (4.0+0.3+4.0+5.9, tarsus missing), tibia 2: 2.7, tibia 3: 1.9, tibia 4: 2.6; tibia 1 l/d: 48. Prosoma shape as in *M. togatus* (cf. figs. 851–854). Carapace ochre-yellow with distinct brown median band. Sternum whitish, with light brown reticulate pattern. Legs light ochre, with darker rings on femora (distally), and tibiae (proximally and distally). Opisthosoma as illustrated for *M. aurantiacus* (cf. fig. 801), with identical pattern of dark spots shown there. Epigynum with pair of light posterior apophyses and anterior dark indentation (fig. 828); internal genitalia as shown in fig. 829.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: ARGENTINA: *Buenos Aires*: types above.

Mesabolivar iguazu, new species

Figures 138, 830–839

TYPE: Male holotype from Parque Nacional Iguazú, Misiones, Argentina; 206 m elev., "Empalme," palm forest, Dec. 8, 1990–Jan. 6, 1991 (S. & J. Peck), in AMNH.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Close relative of *M. argentinensis*, distinguished by the different shape of the epigynum (figs. 837–838).

MALE (holotype): Total length 2.8, carapace width 1.3; leg 1: 40.8 (10.4+0.5+10.0 +18.0+1.9), tibia 2: 6.7, tibia 3: 5.1, tibia 4: 6.5; tibia 1 l/d: 83. Prosoma shape as in *M. togatus* (cf. figs. 852–854); distance PME-ALE about 90% of PME diameter. Carapace light brown with darker lateral margins and central spot, ocular area dark brown, clypeus and sternum light brown, labium darker brown. Chelicerae light brown, with pair of black distal apophyses and pair of weakly sclerotized proximal protrusions (figs. 834–835). Palps as in figs. 830, 833, light to dark brown; with distinct retrolateral coxal apophysis, femur proximally with rounded retrolateral apophysis, distally with bulge (fig. 836), procursus weakly curved, with distinctive tip (figs. 831–832). Tarsal organ exposed. Legs brown, light at tips of femora and tibiae, slightly darker rings just before light tips; legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 2%; tarsus 1 with ~ 25 pseudosegments. Opisthosoma greenish-gray, with dark spots in pattern as in *M. togatus* (cf. figs. 851–852); genital plate brown; gonopore without epiandrous spigots; ALS with only one piriform gland spigot each (fig. 138).

VARIATION: Tibia 1 in 7 males (including holotype): 8.8–12.3 ($\bar{x}$ = 10.7).

FEMALE (N = 3): Total length 2.7–3.3; tibia 1: 6.5–7.2. In general very similar to male. Epigynum light to dark brown, with pair of low humps and conspicuous posterior pocket (figs. 837–838); internal genitalia with large oval pore plates, converging anteriorly (fig. 839).

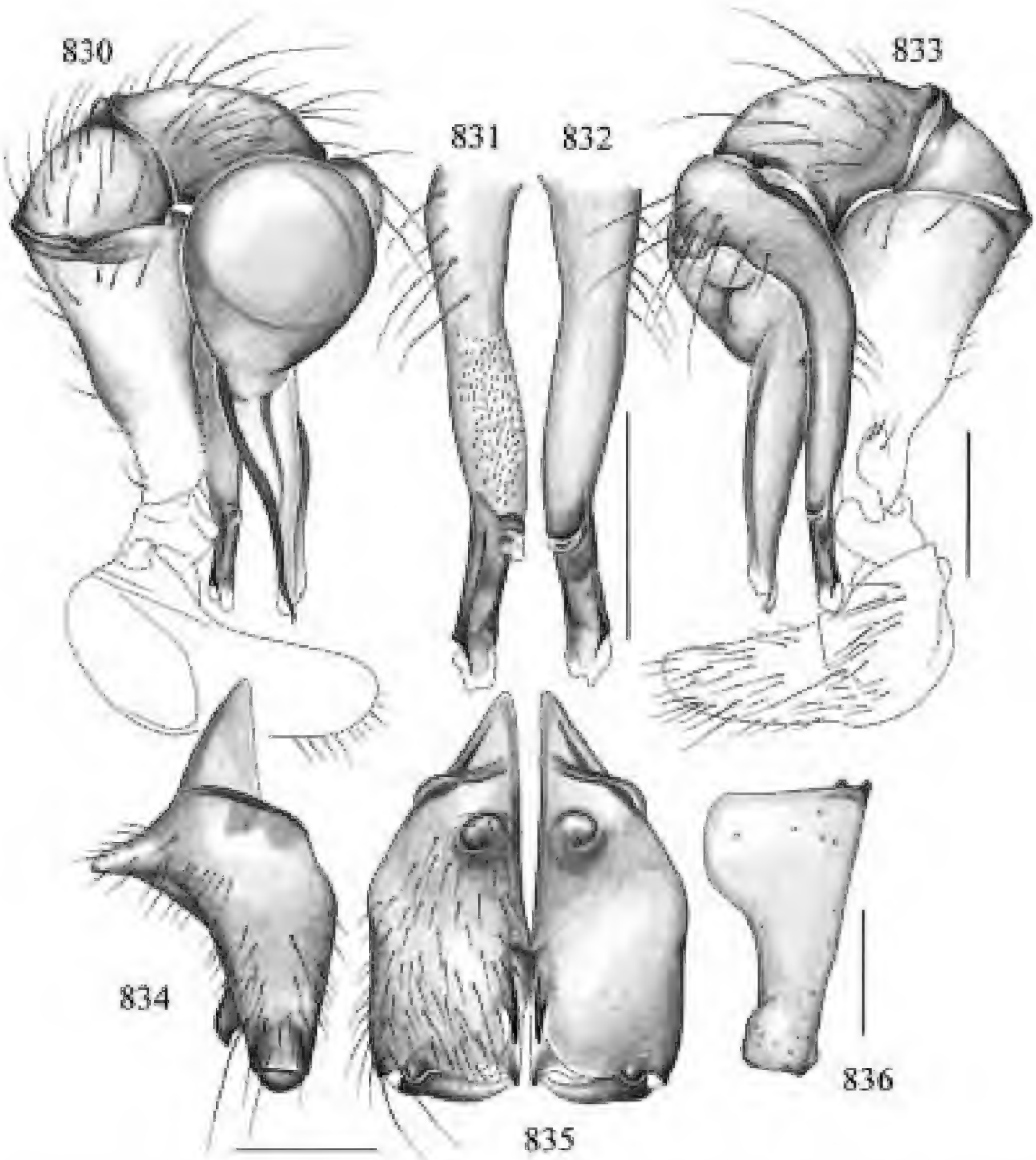
DISTRIBUTION: Known only from area around the Iguazú waterfalls (Argentina and Brazil).

MATERIAL EXAMINED: ARGENTINA: *Misiones*: Parque Nacional Iguazú: types above; same collectors: Dec. 23, 1990–Jan. 6, 1991, "Send. Macuco," 180 m elev., 4♂ in AMNH; Dec. 24, 1990–Jan. 6, 1991, "Cent. Ecol.," forest edge, 180 m elev., 1♂ in AMNH; Jan. 1, 1991, "on rock face along tourist trail," 5♂ 4♀ some juveniles in AMNH; Dec. 8, 1990–Jan. 6, 1991, "Pto. Canoas," hill forest, 200 m elev., 2♂ in AMNH. BRAZIL: *Paraná*: Foz do Iguaçu, Mar. 21–24, 1985 (H. &. L. Levi), 5♂ 3♀ 1 juvenile (4 vials) in MCZ.

Mesabolivar argentinensis (Mello-Leitão, 1938), new combination

Figures 840–842

Litoporus argentinensis Mello-Leitão, 1938: 92, fig. 3; 1944b: 312.



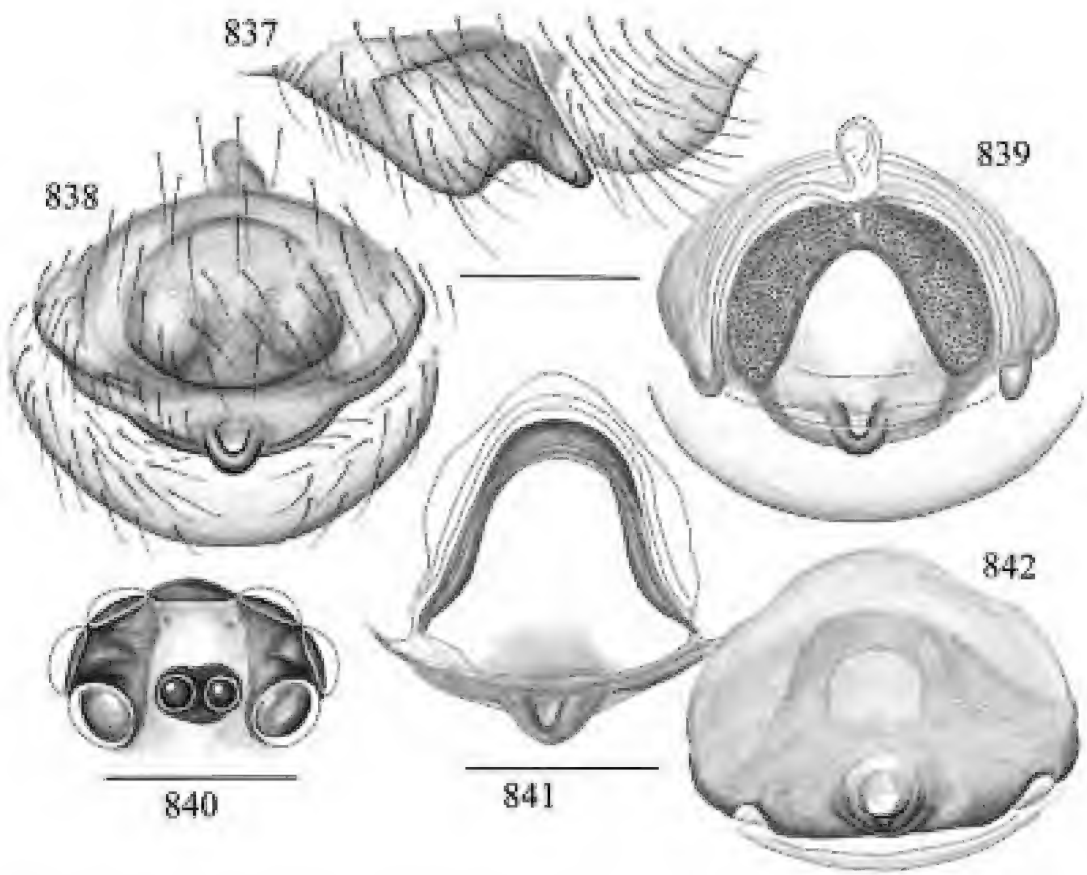
Figs. 830–836. *Mesabolivar iguazu*, n. sp., male. **830**. Left palp, prolateral view. **831**. Left procursus, prolateral view. **832**. Left procursus, retrolateral view. **833**. Left palp, retrolateral view. **834–835**. Chelicerae, lateral and frontal views. **836**. Left palpal femur, retrolaterodorsal view. Scale lines: 0.3 mm.

TYPE: Female holotype from Monte Veloz, Prov. Buenos Aires, Argentina; no date (C. Bruch), in MLP (14031), examined.

DIAGNOSIS: Close relative of *M. iguazu*, distinguished by the shape of the epigynum (scape with pocket more protruding, no humps, internal structures different; figs. 841–842).

MALE: Unknown.

FEMALE (holotype): Total length 3.3; car-



Figs. 837–842. *Mesabolivar* spp. 837–839. *M. iguazu*, n. sp. **837–838**. Epigynum, lateral and ventral views. **839**. Epigynum, dorsal view. 840–842. *M. argentinensis* (Mello-Leitão), female holotype. **840**. Ocular area, frontal view. **841**. Epigynum, dorsal view. **842**. Epigynum, ventral view. Scale lines: 0.3 mm.

apace width 1.1, length 0.9; opisthosoma length 2.3; leg 1: (6.3+0.5+6.2, rest missing), tibia 2: 4.1, tibia 3: 3.3, tibia 4 missing; tibia 1 l/d: 47. Habitus as in *M. togatus* (cf. figs. 851–854); distance PME-ALE about 80% of PME diameter. Prosoma ochre with distinct brown median band dorsally. Legs yellowish, with dark rings on femora (subdistally) and tibiae (proximally), distal tips of femora and tibiae light, whitish; retrolateral trichobothrium of tibia 1 at 3%. Opisthosoma monochromous ochre, epigynum protruding posteriorly, with pocket (fig. 842); dorsal view as in fig. 841.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: ARGENTINA: *Buenos Aires*: Monte Veloz: type above.

Mesabolivar brasiliensis (Moenkhaus, 1898), new combination

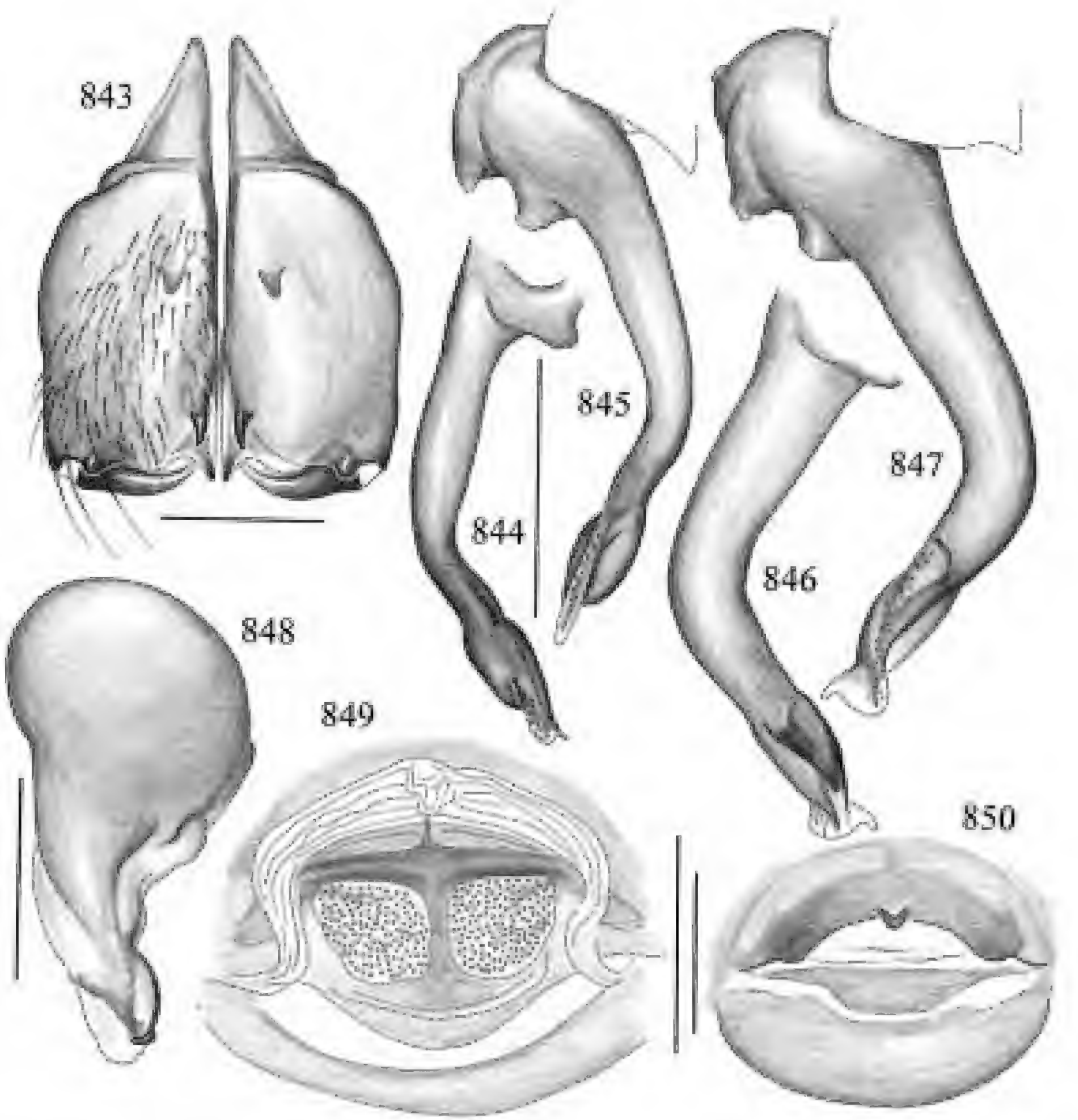
Figures 843–850

Litoporus brasiliensis Moenkhaus 1898: 110–112, figs. 6, 6a–c. – Mello-Leitão, 1918: 95–96 (Mello-Leitão just copied Moenkhaus's description, without adding new information).

Blechroscelis viridis Mello-Leitão, 1918: 105–107, figs. 19–20. – Mello-Leitão, 1947a: 2. NEW SYNONYMY.

JUSTIFICATION OF SYNONYMY: The type specimens of both species were compared and showed no relevant differences.

TYPES: *L. brasiliensis*: male lectotype (designated herein) and 1 ♀ paralectotype, together with four juveniles and two (probably fe-



Figs. 843–850. *Mesabolivar brasiliensis* (Moenkhaus). **843**. Male chelicerae, frontal view. **844–845**. Left procursus of a male from Boraceia, Salesópolis, prolateral (844), and retrolateral (845) views. **846–847**. Left procursus of a male from Teresópolis, prolateral (846), and retrolateral (847) views. **848**. Genital bulb, prolateral view. **849**. Epigynum, dorsal view. **850**. Epigynum, ventral view. Scale lines: 0.2 mm.

male) prosomata from Poço Grande, "margem do Rio Juquiá," São Paulo, Brazil; Jan. 1898 (W. Moenkhaus), in MZSP, examined. *B. viridis*: three male syntypes from Pinheiro, Rio de Janeiro, Brazil; date and collector not given, in MNRJ, examined.

NOTE: Moenkhaus (1898) described only the male. Whether he added the female(s) later, or was misled by the unusually small and inconspicuous epigynum into believing that the females were juveniles, is not known. Whatever, it is highly probable that the material above is at least conspecific (if not identic) with Moenkhaus's original material.

DIAGNOSIS: Easily distinguished from known congeners by the tiny and inconspic-

uous epigynum (fig. 850), and the distally widened and sclerotized procursus (figs. 844–845).

MALE: The *L. brasiliensis* lectotype is in poor general condition, completely bleached and colorless, with only one femur 3 left from the legs. Measurements copied from Moenkhaus (1898): Total length 3.0; carapace width 1.0; leg 1: 57.9 (15.5+0.5+12.5 +27.0+2.4), tibia 2: 9.5, tibia 3: 7.5, tibia 4: 8.5. Measurements of *B. viridis* syntypes: carapace width (N = 3) 1.1–1.3; tibia 1 (N = 1) 10.0.

The following description is based on material from Boraceia, Salesópolis: Prosoma shape similar to *M. togatus* (cf. figs. 852–854), orange ochre; distance PME-ALE about 100% of PME diameter. Chelicerae with pair of black, distal apophyses and very inconspicuous pair of more proximal, unsclerotized light protrusions (fig. 843). Palp generally as in *M. guapiara* (cf. figs. 864–865), with distinctive procursus (figs. 844–845), and simple bulb (fig. 848). Legs orange-ochre, with very distinct brown bands on femora (subdistally) and tibiae (proximally and subdistally), tips of femora and tibiae light; femora 2 significantly thicker than others; legs without spines, without curved and vertical hairs; tibia 1 l/d: 77; retrolateral trichobothrium of tibia 1 at 1.8%; tarsus 1 with over 40 pseudosegments (difficult to count!). Opisthosoma monochromous ochre-yellow (Moenkhaus described it as light green), shape very similar to that of *M. huanuco* (cf. fig. 782).

VARIATION: The single male from Teresópolis, Rio de Janeiro, showed some differences that might be significant; it is therefore only tentatively assigned to the species. It was slightly larger (total length 3.9), with a relatively shorter tibia 1 (10.7), had only very faint rings on the legs, and a slightly different procursus (figs. 846–847).

FEMALE (Boraceia, Salesópolis): Carapace width (N = 3) 1.0–1.1; tibia 1: 8.5 (tibia 1 in paralectotype: 7.5). Epigynum very small in relation to opisthosoma and of same color, only slightly protruding, with tiny median pocket (fig. 850); internal genitalia with pair of relatively large pore plates (fig. 849).

DISTRIBUTION: Known from São Paulo, Paraná, and Rio de Janeiro (Brazil). According to Mello-Leitão (1947a) also in Minas Gerais.

MATERIAL EXAMINED: BRAZIL: *São Paulo:* Poço Grande: *L. brasiliensis* types above; Boraceia Salesópolis, 800 m elev., Oct. 21–25, 1963 (Oliveira & P. Wygodzinski), 2♂ 3♀ in AMNH. *Rio de Janeiro*: Pinheiro: *B. viridis* types above; Ilha Grande, sea level, May 20, 1944 (H. Sick), 1♂ 1 juvenile in AMNH; Teresópolis, 950 m elev., Mar. 1979 (C. W. Myers), 1♂ assigned tentatively, in AMNH; Rio de Janeiro, Tijuca Mtn., Aug. 1983 (I. Stupakoff) 1♀ in AMNH. *Paraná*: Serra da Graciosa, Morretes, Jan. 9–20, 1995 (Lab. Aracnologia), 2♂ in MCP (7208 part).

Mesabolivar togatus (Keyserling, 1891), new combination

Figures 851–863

Pholcus togatus Keyserling, 1891: 172–173, pl. 5: figs. 118, 118a–c.

Coryssocnemis togatus / -a: Moenkhaus 1898: 95. – Mello-Leitão, 1918: 103 (both authors simply translated Keyserling's original description, and added poorly specified new records).

Pholcus coeruleus Keyserling, 1891: 171; pl. 5: figs. 116, 116a, NEW SYNONYMY.

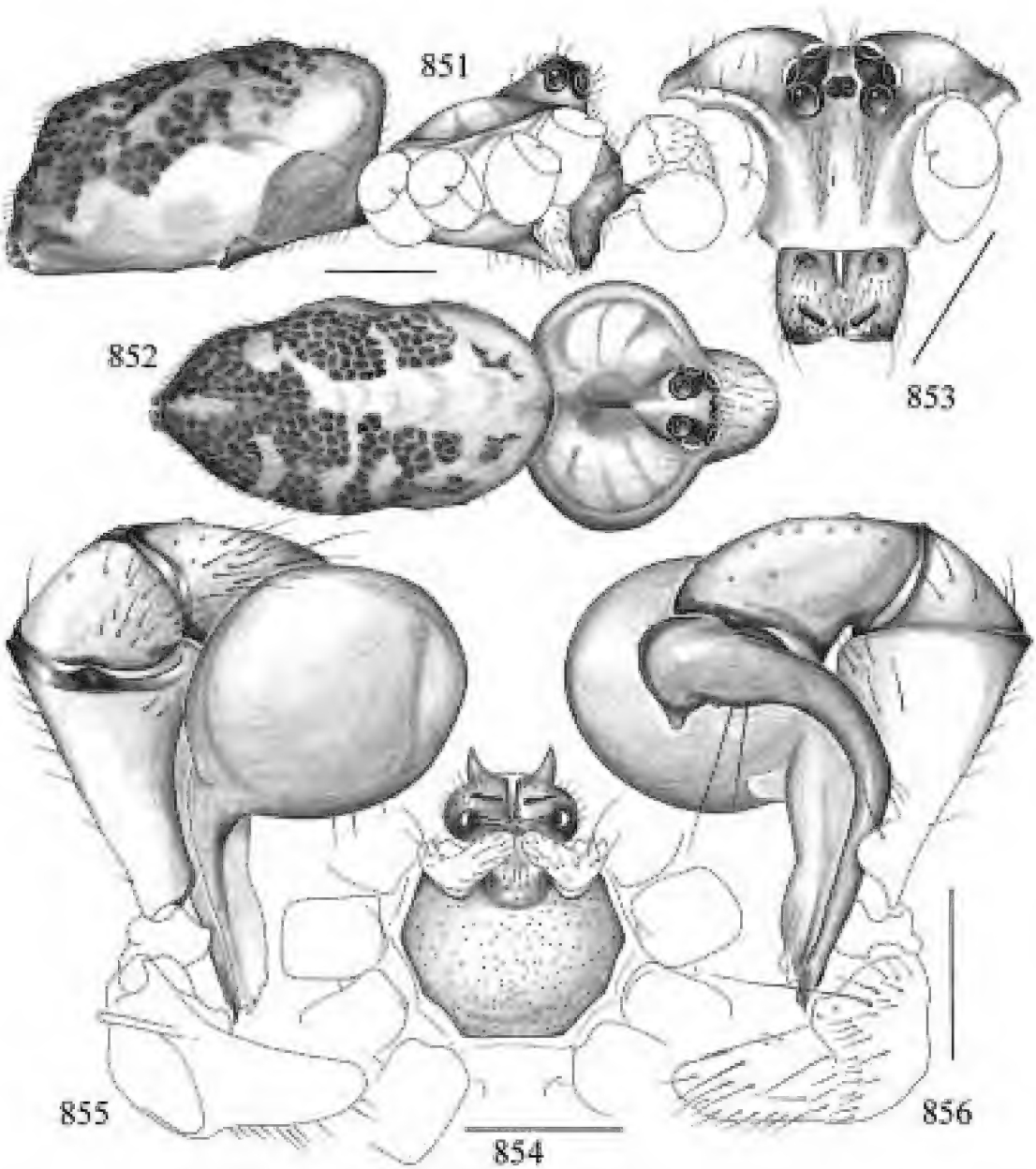
Blechroscelis coruleus [sic] / *coerulea/-us/ cærulea*: Moenkhaus 1898: 101. – Mello-Leitão, 1918: 108 (both authors simply translated Keyserling's original description). – Mello-Leitão, 1940c: 21; 1947c: 233. – Bonnet, 1955: 890.

JUSTIFICATION OF SYNONYMY: The comparison of the type material of *Pholcus togatus* Keyserling and *Pholcus coeruleus* Keyserling with the two males and six females collected together (see below) leaves no doubt about the synonymy.

TYPES: *Pholcus togatus*: two male syntypes from "Fazenda Sergio Potta de Castro," Rio de Janeiro, Brazil, no date (E. A. Göldi), in BMNH (1890.7.1.8328), examined. *Pholcus coeruleus*: female holotype from Rio de Janeiro, Brazil, no date (E. A. Göldi), in BMNH, examined.

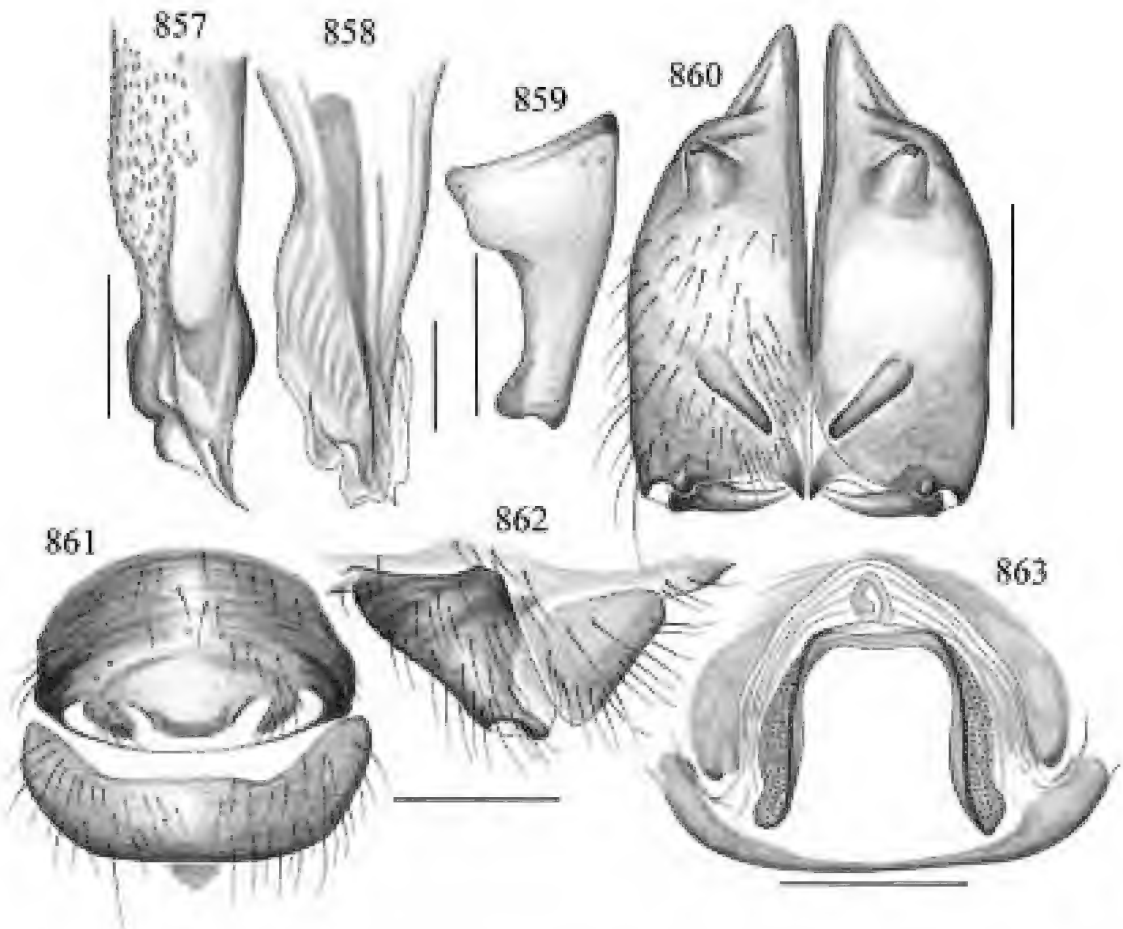
DIAGNOSIS: Easily distinguished from congeners by the large transverse ridges on the male chelicerae in addition to the proximal pair of pointed apophyses (figs. 854, 860).

MALE (*P. togatus* syntype): Measurements copied from Keyserling (1891) (my measurements gave only slightly different values,



Figs. 851–856. *Mesabolivar togatus* (Keyserling), male. **851–852**. Habitus, lateral and dorsal views. **853**. Prosoma, frontal view. **854**. Prosoma, ventral view. **855**. Left palp, prolateral view. **856**. Left palp, retrolateral view. Scale lines: 1.0 mm (851–854), 0.5 mm (855–856).

and most legs are either loose or missing): Total length 5.5; carapace width 2.0; leg 1: 71.5 (18.0+1.0+17.2+32.1+3.2), tibia 2: 12.7, tibia 3: 7.3, tibia 4: 11.4. Habitus and prosoma shape as in figs. 851–854. Carapace with distinct thoracic groove, ochre with brown spot medially, eight eyes on moderately elevated ocular area; distance PME-ALE about 85% of PME diameter. Clypeus ochre, sternum orange-brown. Chelicerae brown with distinctive pair of frontal, heavily sclerotized ridges and pair of more proximal,

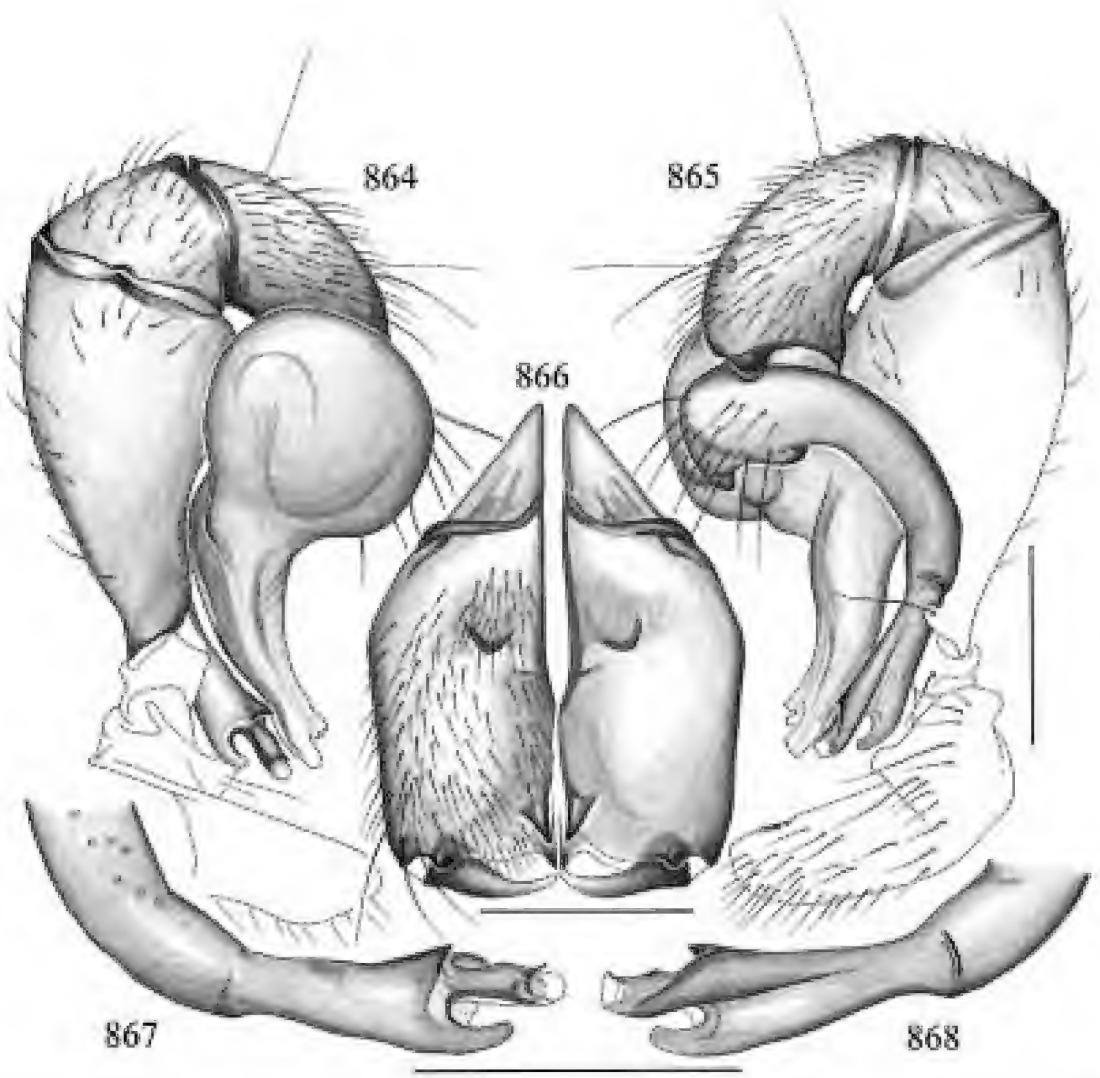


Figs. 857–863. *Mesabolivar togatus* (Keyserling). **857**. Left procursus tip, retrolateral view. **858**. Tip of embolar division of left bulb, retrolateral view. **859**. Male left palpal femur, retrolateral view. **860**. Male chelicerae, frontal view. **861–862**. Epigynum, ventral and lateral views. **863**. Epigynum, dorsal view. Scale lines: 0.5 mm (859–863), 0.1 mm (857–858).

pointed apophyses (fig. 860). Palps as in figs. 855–856, light brown with dark brown procursus; distinct retrolateral coxal apophysis, femur proximally with rounded retrolateral apophysis and distal bulge (fig. 859); procursus simple, widely curved rod, with relatively simple tip (figs. 856–857), bulb also simple (figs. 855, 858). Legs light brown, slightly darker rings on femora (subdistally) and tibiae (proximally); femora 2 and 3 thicker than 1 and 4; legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 with ~ 35 pseudosegments. Opisthosoma ochre-gray, dorsally with dark spots (fig. 852), ventrally light brown, with large brown genital plate.

FEMALE (*P. coeruleus* holotype): Total length 4.9, carapace width 1.7; leg 1: 50.9 (12.9+0.7+12.5+22.0+2.8), tibia 2: 8.4, tibia 3: 5.6, tibia 4: 8.4; tibia 1 l/d: 70. In general very similar to male; femora and tibiae with light distal tips. Epigynum as in figs. 861–862, light to dark brown; internal genitalia with pair of large pore plates that delimit copulatory chamber laterally (fig. 863).

VARIATION: Tibia 1 in three males (including Keyserling's measurement): 16.8–17.5 (tibia 1 l/d: 84); total length in five females from Sumare, Rio de Janeiro: 4.3–5.6 ($\bar{x}$ =



Figs. 864–868. *Mesabolivar guapiara*, n. sp., male holotype. **864**. Left palp, prolateral view. **865**. Left palp, retrolateral view. **866**. Chelicerae, frontal view. **867**. Left procursus tip, prolateral view. **868**. Left procursus tip, retrolateral view. Scale lines: 0.5 mm.

4.8); tibia 1 in same females: 11.9–13.9 ($\bar{x}$ = 13.2). In the males from Sumare, Rio de Janeiro, the tips of femora and tibiae are light, like those of the *P. coeruleus* holotype.

DISTRIBUTION: Mello-Leitão (1918) claimed to have material from "varias localidades dos Estados de S. Paolo e Rio de Janeiro," and later (Mello-Leitão, 1940c, 1947c) cites material from Pará and Paraná. I have only seen material from Rio de Janeiro, Brazil.

MATERIAL EXAMINED: BRAZIL: *Rio de Janeiro:* types above; Sumare, cidade Rio de Janeiro, 200–300 m elev., Jan. 1946 (H. Sick), 2♂ 6♀ 1 juvenile in AMNH.

Mesabolivar guapiara, new species

Figures 864–868

TYPE: Male holotype from Fazenda Intervales, 15 km E Guapiara, São Paulo, Brazil; 700 m elev., Feb. 1990 (W. G. Eberhard), in MCZ.

ETYMOLOGY: Named for the town near the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Close relative of *M. brasiliensis*, easily distinguished by the shape of the procursus (figs. 867–868).

MALE (holotype): Total length 4.8, carapace width 2.1; leg 1: 71.0 (17.9+0.9+17.2 +32.1+3.2), tibia 2: 11.6, tibia 3: 8.7, tibia 4: 11.1; tibia 1 l/d: 81. Prosoma shape as in *M. togatus* (cf. figs. 851–854); distance PME-ALE about 85% of PME diameter. Carapace ochre-yellow, with brown median mark, ocular area brown, clypeus ochre-yellow, sternum light orange-ochre. Chelicerae light brown, with pair of black distal apophyses and pair of weakly sclerotized proximal protrusions (fig. 866). Palps as in figs. 864–865, ochre-yellow to light brown; with distinct retrolateral coxal apophysis, femur very large, proximally with rounded retrolateral apophysis, distally only widened; procursus strongly curved, with distinctive tip (figs. 867–868). Legs ochre, femora and tibiae with light tips; femora 2 and 3 stronger than others; legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 1.9%. Opisthosoma greenish-gray, with dark greenish spots in pattern as in *M. togatus* (cf. fig. 852).

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BRAZIL: *São Paulo:* 15 km E Guapiara: type above.

Mesabolivar maxacali, new species

Figures 869–875

TYPES: Male holotype, 3♂ 5♀ paratypes, and 2 juveniles from "Mina Serinha," Diamantina, Minas Gerais, Brazil; Jan.–Mar. 1945 (E. Cohn), in AMNH.

ETYMOLOGY: The specific name is a noun in apposition honoring the Maxacalí. Once a large tribe, they are now reduced to fewer than 500 people, living at government Indian posts in Minas Gerais.

DIAGNOSIS: Distinguished from *M. iguazu* by the proximal apophyses on the male chelicerae (facing downwards; figs. 869–870), from *M. botocudo* and *cyaneomaculatus* by the presence of two pairs of apophyses on the male chelicerae; from both species by the epigynum, which has an indistinct median groove, but lacks a real pocket (fig. 873).

MALE (holotype): Total length 4.9, carapace width 1.6; leg 1: 63.1 (15.2+0.8+15.2 +28.3+3.6), tibia 2: 10.9, tibia 3: 6.3, tibia 4: 9.7; tibia 1 l/d: 91. Prosoma shape as in *M. togatus* (cf. figs. 851–854). Carapace light brown, darker medially; ocular area brown; distance PME-ALE about 100% of PME diameter. Clypeus light brown, sternum light brown to orange. Chelicerae brown, with two pairs of black apophyses (figs. 869–870). Palps as in *M. togatus* (cf. figs. 855–856), light brown, only tip of procursus dark; procursus with short rounded prolateral apophysis (fig. 872), otherwise very similar to *M. cyaneomaculatus* and *M. botocudo* (see figs. 814, 879). Legs light to dark brown, femora and tibiae with light tips that are preceded by slightly darker rings; femora 3 thicker than others; legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 1.6%; tarsus 1 with over 30 pseudosegments. Opisthosoma greenish-gray, with blackish spots in pattern as in *M. togatus* (cf. fig. 852); genital plate light brown to orange.

VARIATION: Tibia 1 in three males (including holotype): 14.5–15.2.

FEMALE (paratypes): Tibia 1 (N = 3) 10.5–12.3. In general very similar to male. Epigynum dark brown anteriorly, with indistinct median groove and barely recognizable pocket (fig. 873), slightly elevated (fig. 874); internal genitalia with large pore plates, confining uterus externus laterally (fig. 875).

DISTRIBUTION: Known only from type locality.

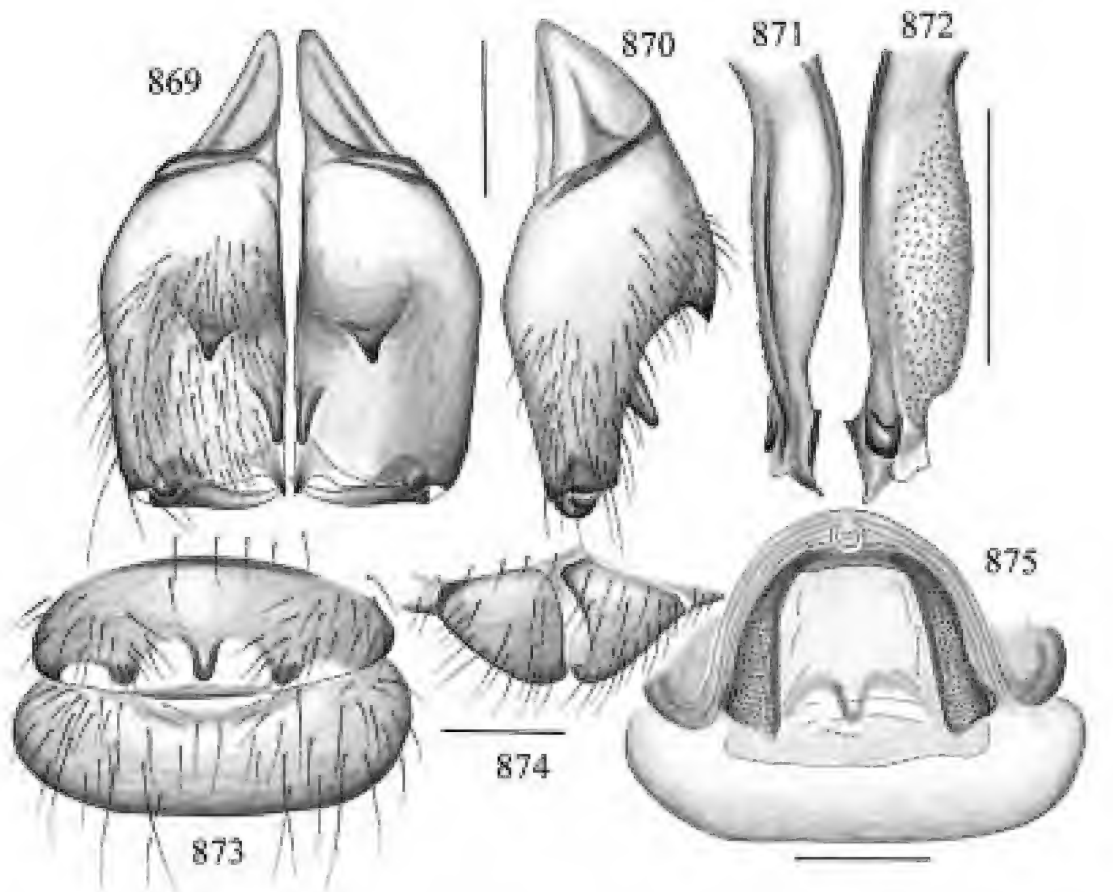
MATERIAL EXAMINED: BRAZIL: *Minas Gerais*: "Mina Serinha," Diamantina: types above.

Mesabolivar botocudo, new species

Figures 876–882

TYPE: Male holotype from "Mina Serinha," Diamantina, Minas Gerais, Brazil; Jan.–Mar. 1945 (E. Cohn), in AMNH.

ETYMOLOGY: The specific name is a noun in apposition honoring the Botocudo people, who once occupied a wide stretch of forest in Minas Gerais and Espírito Santo. They are now reduced to perhaps 50 people.

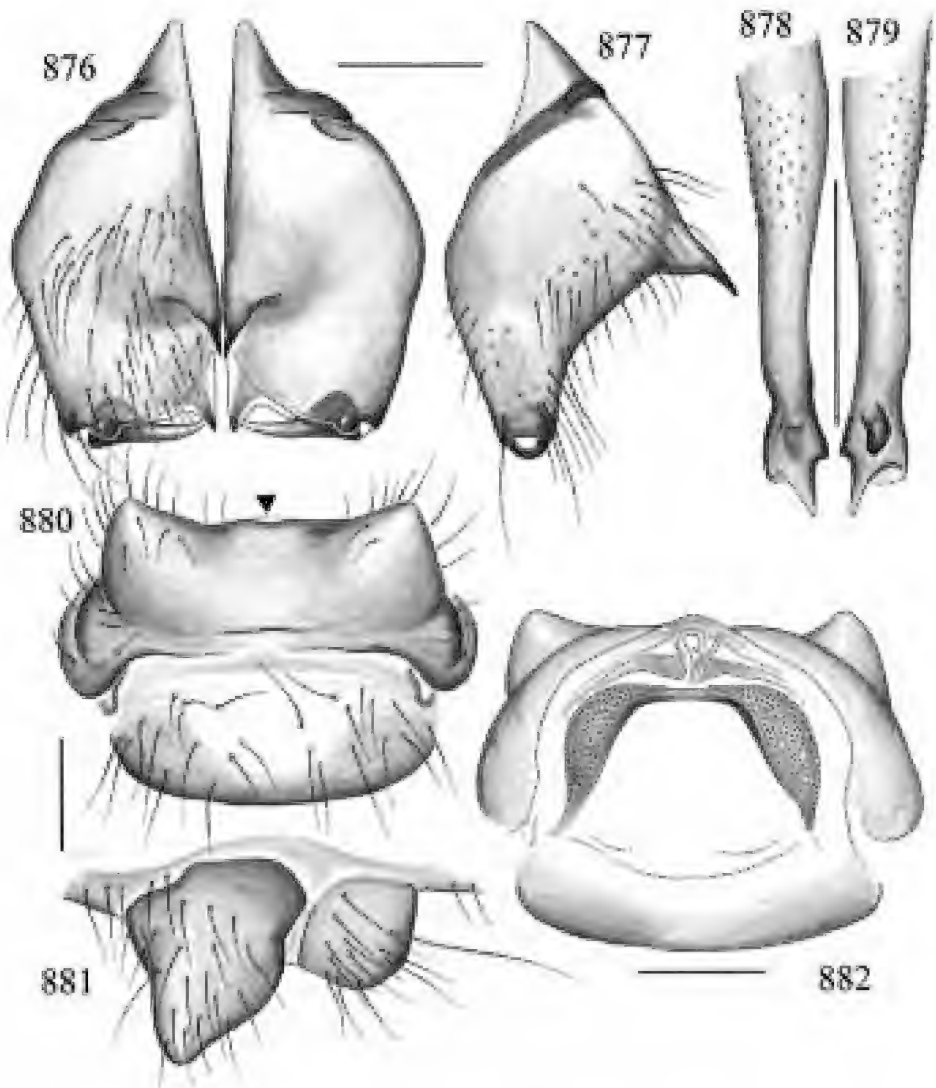


Figs. 869–875. *Mesabolivar maxacali*, n. sp. **869–870**. Male chelicerae, frontal and lateral views. **871**. Left procursus, ~ retrolateral view. **872**. Left procursus, prolateral view. **873–874**. Epigynum, ventral and lateral views. **875**. Epigynum, dorsal view. Scale lines: 0.3 mm.

DIAGNOSIS: Close relative of *M. cyaneomaculatus* and *M. maxacali*, distinguished by the single pair of long and pointed apophyses on the male chelicerae (figs. 876–877), the tip of the procursus (figs. 878–879), and the epigynum with large apophyses and tiny pocket in anterior position (figs. 880–881).

MALE (holotype): Total length 3.2, carapace width 1.4; leg 1: 30.3 (7.9+0.6+7.5 +12.3+2.0), tibia 2: 5.1(?), tibia 3: 3.6, tibia 4: 5.3; tibia 1 l/d: 45. Prosoma shape as in *M. togatus* (cf. figs. 851–854); distance PME-ALE about 100% of PME diameter. Carapace light brown, darker medially; ocular area brown, clypeus and sternum light brown. Chelicerae light brown, with pair of long pointed apophyses, only tips black (figs. 876–877). Palps as in *M. cyaneomaculatus* (cf. figs. 813, 816), light brown, only tip of procursus dark; procursus with short, rounded prolateral apophysis (fig. 879), otherwise similar to *M. cyaneomaculatus* and *M. maxacali* (cf. figs. 814, 872). Legs brown, femora and tibiae with light tips; femora 1 and 2 thickest; legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 2.3%; tarsus 1 with ~ 25 pseudosegments. Opisthosoma greenish-gray, with blackish spots in pattern as in *M. togatus* (cf. fig. 852); large brown genital plate.

FEMALE (type locality): Total length (N = 10) 2.0–2.8 ($\bar{x}$ = 2.5), tibia 1 (N = 8) 5.1–5.7 ($\bar{x}$ = 5.5). In general very similar to male; some females with slightly darker rings before distal light tips on femora and tibiae. Epigynum light brown, with pair of



Figs. 876–882. *Mesabolivar botocudo*, n. sp. **876–877**. Male chelicerae, frontal and lateral views. **878**. Left procursus, retrolateral view. **879**. Left procursus, prolateral view. **880–881**. Epigynum, ventral and lateral views (arrow points to position of pocket; pocket itself visible only in anterior view). **882**. Epigynum, dorsal view. Scale lines: 0.2 mm.

large lateral apophyses (fig. 881) and inconspicuous anterior(!) pocket (fig. 880); internal genitalia with large pore plates, confining uterus externus laterally (fig. 882).

VARIATION: Tibia 1 in three males (including holotype): 7.3–7.5.

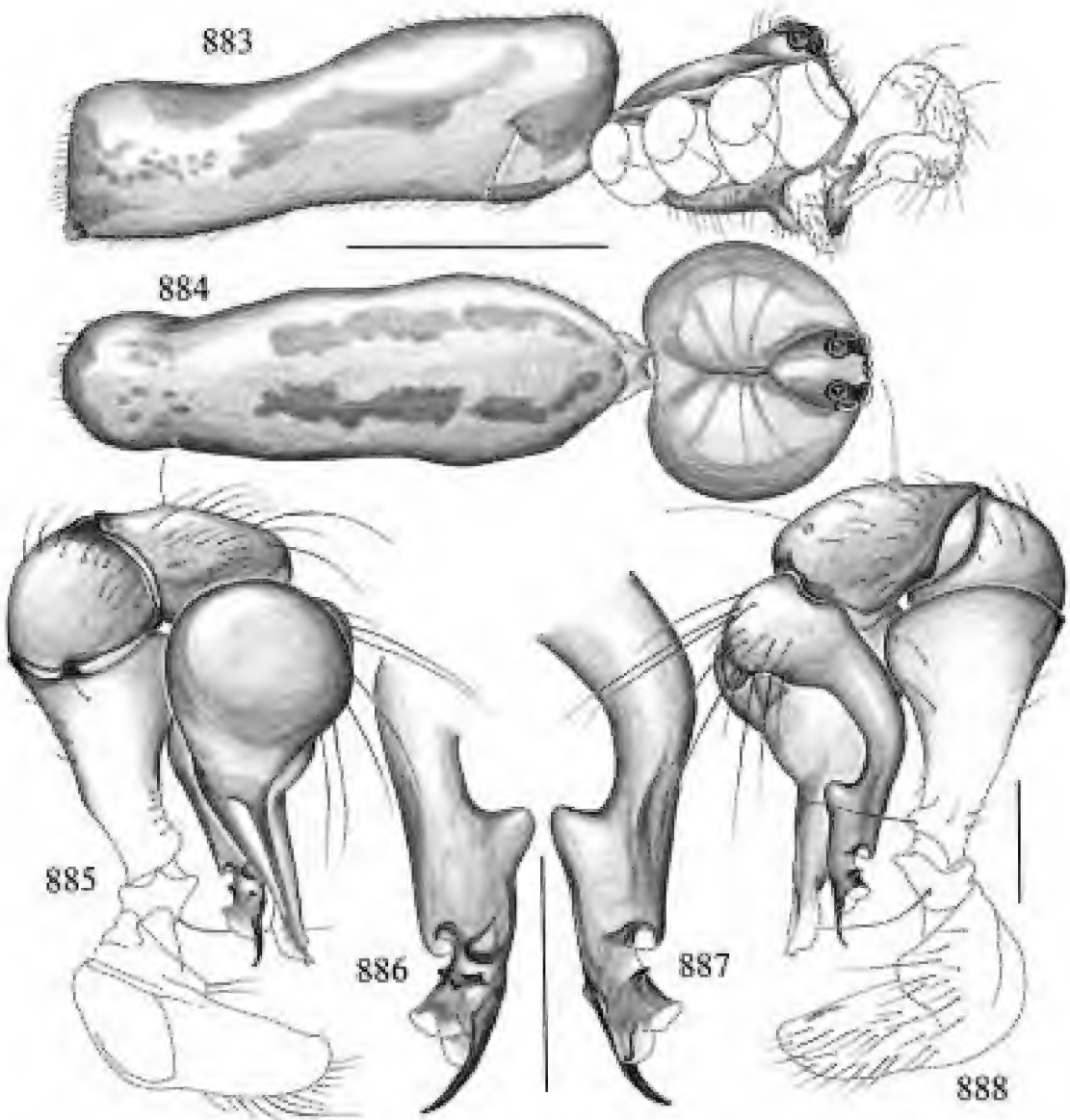
DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BRAZIL: *Minas Gerais*: "Mina Serinha," Diamantina: type above; same locality, same collector, all in AMNH: Jan.–Mar., 1945, 3♂ 8♀; Dec. 1944, 1♂ 2♀ 1 juvenile; no date, 3♀.

Mesabolivar cyaneotaeniatus (Keyserling, 1891), new combination

Figures 55, 883–894

Pholcus cyaneo-taeniatus Keyserling, 1891: 176–177, pl. 6: figs. 121, 121a–b.

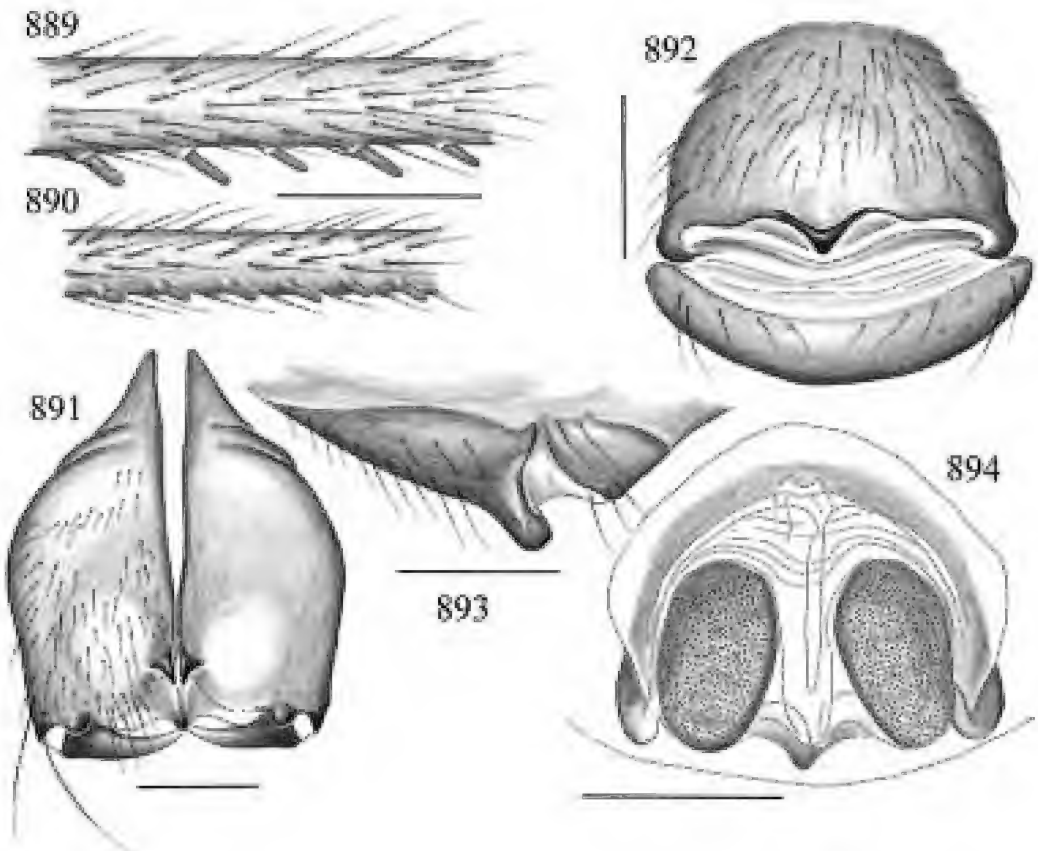


Figs. 883–888. *Mesabolivar cyaneotaeniatus* (Keyserling), male. **883–884**. Habitus, lateral and dorsal views. **885**. Left palp, prolateral view. **886**. Left procursus, prolateral view. **887**. Left procursus, retrolateral view. **888**. Left palp, retrolateral view. Scale lines: 2.0 mm (883–884), 0.3 mm (885–888).

Blechroscelis cyaneo-taeniatus / -a/ cyaneotæniata: Moenkhaus, 1898: 99–100. – Mello-Leitão, 1918: 105. (Both authors simply translated Keyserling's original description, adding no new information except records.) – Bonnet, 1955: 891. – Mello-Leitão, 1946: 55–56, erroneous synonymization of *Blechroscelis azurea* Badcock and Oxon (see Notes below). – Huber, 1999: figs. 12–13.

TYPES: Male lectotype (designated herein), 3♀ paralectotypes from "Miracena, St. Antonio at Rio Pomba," Rio de Janeiro, Brazil, no date (E. A. Göldi), in BMNH (0321-4), examined.

NOTES: There are no palps left with the male lectotype. However, there is no reasonable doubt that the additional material stud-



Figs. 889–894. *Mesabolivar cyaneotaeniatus* (Keyserling). **889–890**. Male metatarsus at ~ 2/5 and at ~ 4/5 of length, with ventral row of spines. **891**. Male chelicerae, frontal view. **892–893**. Epigynum, ventral and lateral views. **894**. Epigynum, dorsal view. Scale lines: 0.3 mm.

ied herein is in fact conspecific with the lectotype: Keyserling's (1891) figs. 121, 121a–b clearly show the unique dorsal protrusion on the procursus, the cylindrical opisthosoma and the shape of the epigynum.

Mello-Leitão (1946) synonymized *Blechroscelis azurea* Badcock and Oxon, 1932 with the present species. I have seen the male and female syntypes of *B. azurea*, and there is no doubt that this is a good species. (I received the material too late to include a redescription in the present paper.) The male has a very different procursus (somewhat resembling that of *M. guapiara*: fig. 865), the chelicerae are intermediate between figs. 891 and 897. The epigynum is very similar to *M. cyaneotaeniatus* (fig. 892), but relatively narrower. In sum, *B. azurea* is certainly congeneric with *M. cyaneotaeniatus*, but not conspecific, and not even as similar as noted by Badcock and Oxon (1932): *Mesabolivar azureus* (Badcock and Oxon, 1932), new combination.

DIAGNOSIS: Easily distinguished from congeners by the cylindrical opisthosoma (figs. 883–884), by the rounded dorsal protrusion on the procursus (figs. 886–888), and the rather flat epigynum with distinctive posterior pocket (figs. 892–893).

MALE (lectotype): Total length 5.9, carapace width 2.0; leg 1 missing, tibia 2: 10.9, tibia 3: 8.1, tibia 4: 9.4. Habitus as in figs. 883–884; distance PME-ALE about 80% of PME diameter. Carapace ochre with brown central and lateral marks, ocular area and clypeus ochre, sternum ochre, turning gradually brown toward center. Chelicerae light brown with only one pair of black, frontal

apophyses (fig. 891). Palps as in figs. 885, 888, ochre to brown; procursus with distinctive dorsal protrusion and distal spinelike apophysis (figs. 886–887). Tarsal organ exposed. Legs light brown, distal tips of femora and tibiae light; femora with many vertical hairs in two dorsal stripes; metatarsi 2 and 3 with ventral row of short spines with rounded tips (figs. 889–890). Opisthosoma pale greenish-ochre, with several dark-greenish stripes (a dorsal pair, lateral pair, and ventral stripe behind genital plate), each stripe consisting of many contiguous spots; lung plates brown, genital plate rectangular, brown; gonopore without epiandrous spigots; ALS with only one piriform gland spigot each.

Measurements of male from Jardim Botanico, Rio de Janeiro: leg 1: 68.1 (17.7+0.8+15.7+31.1+2.8), tibia 2: 10.4, tibia 3: 7.7, tibia 4: 8.9; tibia 1 l/d: 74; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 with over 30 pseudosegments.

VARIATION: Tibia 1 in three males: 14.7–15.7.

FEMALE (paralectotypes): Carapace width 1.7, leg 1 missing, tibia 3 (N = 3) 5.4–5.8. In general very similar to male, but femora without vertical hairs. Epigynum only slightly elevated where pocket is situated (figs. 892–893), internal genitalia with pair of large oval pore plates (fig. 894).

DISTRIBUTION: Apparently widely distributed throughout eastern Brazil. I have seen material from the states Rio de Janeiro, São Paulo, Paraná, and Pará. Mello-Leitão (1946) also cites Espírito Santo and Rio Grande do Sul.

MATERIAL EXAMINED: BRAZIL: *Rio de Janeiro*: "Miracena, St. Antonio at Rio Pomba": types above; Parque Nac. Tijuca, road to Paineiras, Apr. 1, 1987 (L. Levi), 1♂ 1 juvenile in MCZ; Rio de Janeiro, Jardim Botanico, Apr. 2, 1987 (H. & L. Levi), 1♂ 2 juveniles in MCZ; Guanabara, June 1971 (T. McGrath), 3♀ 4 juveniles in MCZ; Guanabara, Floresta dos Macacos, Feb. 1961 (M. Alvarenga), 1♀ in AMNH. *São Paulo*: São Paulo, Jardim Botanico, Mar. 9–10, 1985 (H. & L. Levi), 3♂ 3♀ 1 juvenile (2 vials) in MCZ; São Paulo, Jardim Botanico, Agua Funda, July 7, 1962 (P. de Biasi & A. F. Archer), 2♀ in AMNH. *Pará*: Belém, July 1971 (T. McGrath), 1♂ in MCZ; *Paraná*: Serra da Graciosa, Morretes, Jan. 9–20, 1995 (Lab. Aracnologia), 1♂ 1♀ in MCP (7208 part).

Mesabolivar cambridgei (Mello-Leitão, 1947), new combination

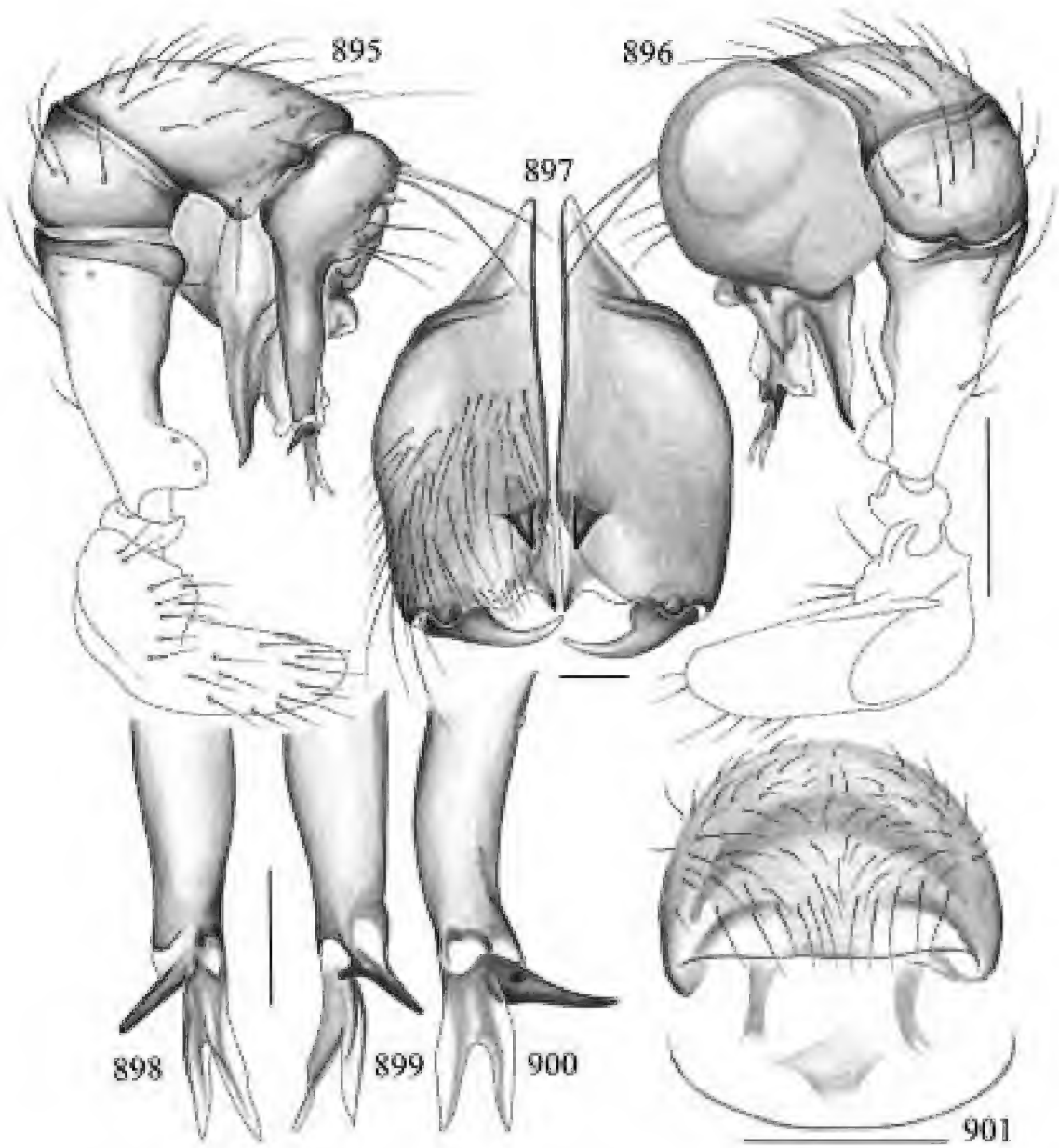
Figures 895–901

Blechroscelis cambridgei Mello-Leitão, 1947b: 160, fig. 3 (fig. 2 from non-conspecific female; see Notes below).

TYPES: Male holotype (with only right pedipalp), 1♀ paratype, from forest at Santarém, Pará, Brazil; no date (F. O. Pickard-Cambridge), in BMNH, examined; 6♂ 4♀ paratypes, some juveniles from Monte Alegre, Pará, Jan. 1896 (F. O. Pickard-Cambridge), in BMNH, examined; 1♀ paratype from Breves, Pará, no date (F. O. Pickard-Cambridge), in BMNH, examined; 1♀ paratype from "Lower Amazonas," Pará, no date (F. O. Pickard-Cambridge), in BMNH, examined.

NOTES: Mello-Leitão (1947b) designated a holotype and paratypes, but the identity of the holotype is not clear. I received from the BMNH seven vials labeled by Mello-Leitão "*Blechroscelis cambridgei*," two of which were labeled as "Type" and "typi", respectively. One of them contained specimens from the type locality (Santarém): a male that is very probably conspecific with the male whose palp Mello-Leitão's (1947b) fig. 3 shows, and a female that is conspecific with the male. The second "type-vial" contained two specimens from "Lower Amazonas": one male *Mesabolivar aurantiacus* (Mello-Leitão), and one male *Carapoia fowleri*, n. sp. From this it is clear that the first vial contains the "real" types. Since the male from this vial fits Mello-Leitão's drawing (his fig. 3), while the female does not, I assume herein that the male is the actual holotype.

The other five vials (Mello-Leitão's "numerous paratypes") contained several different species, up to five species per vial. Technically, these are all paratypes (ICZN, 1999: Art. 72.4.2). Three vials (from Monte Alegre, Breves, "Lower Amazonas") contained material conspecific with the lectotype (see Types above). One vial (Santarém Forest) contained a very close relative of *M. cambridgei*, but with the cheliceral apophyses



Figs. 895–901. *Mesabolivar cambridgei* (Mello-Leitão), male lectotype and female paralectotype. **895**. Right palp, retrolateral view. **896**. Right palp, prolateral view. **897**. Male chelicerae, frontal view. **898–900**. Right procursus, retrolateral (898), prolateral (899), and ~ dorsal (900) views. **901**. Epigynum, ventral view. Scale lines: 0.3 mm (895–896, 901), 0.1 mm (897–900).

more proximal and farther apart, and with a slightly different procursus tip (the proximal tooth on the distal spine is missing, among other differences). The other species included were *Mesabolivar aurantiacus*, *Carapoia fowleri*, *Physocyclus globosus*, and two unidentified females (one similar to *Mesabolivar spinulosus*, one possibly conspecific with the close relative of *M. cambridgei* mentioned above). This probably explains two errors in Mello-Leitão's (1947b) paper: his fig. 2 is probably from a *M. aurantiacus* fe-

male, and his observation that the femora 3 are thicker than the others probably comes from a *M. aurantiacus* or *C. fowleri* male.

DIAGNOSIS: Distinguished from congeners by the procursus, which ends in a semitransparent, bifurcated lamina and a laterally projecting apophysis with a proximal tooth (figs. 898–900); by the male chelicerae with a pair of short frontal apophyses close to the median line (fig. 897); and by the simple epigynum without pocket or groove (fig. 901).

MALE (holotype): Total length ~ 3.5 (opisthosoma shrunken), carapace width 1.45; leg 1: (12.9+0.6+11.7+23.7, tarsus missing), tibia 2: 7.3, tibia 3: 5.4, tibia 4: 6.6; tibia 1 l/d: 85. Prosoma very similar to *M. huanuco* (cf. figs. 782–784); carapace and clypeus orange-ochre, sternum pale ochre; chelicerae orange-ochre with light brown frontal apophyses (fig. 897). Palps as in figs. 895–896, rounded but distinct retrolateral coxal apophysis, femur proximally with large retrolateral apophysis, procursus ending in semitransparent, bifurcated lamina and laterally projecting apophysis (figs. 898–900), bulb with strong distal apophysis ventrally, and membranous elements dorsally (figs. 895–896). Legs orange to light brown, femora and tibiae with light tips, all femora about same thickness; femora with many light, short spines in ventral bands; legs without vertical and curved hairs. Opisthosoma pointed posteriorly (similar to *M. huanuco*, cf. fig. 782), gray with two pairs of stripes consisting of many dark spots.

FEMALE (paratype): Total length 4.7, carapace width 1.3, tibia 2: 5.6, tibia 4: 5.3 (others missing). In general very similar to male, but femora without spines, and dark stripes on opisthosoma more distinct. Epigynum simple plate (fig. 901).

VARIATION: Tibia 1 in other male: 11.5, other female: 9.3. Some males had spines also proximally on the tibiae. One male had also curved hairs on the legs.

DISTRIBUTION: Known only from Brazil, Pará.

MATERIAL EXAMINED: BRAZIL: *Pará*: types above.

Mesabolivar xingu, new species

Figures 902–906

TYPE: Male holotype from 260 km N Xavantina (Chavantina), Mato Grosso, Brazil; 400 m elev., grassland, Feb.–Apr. 1969 (Xavant-Cachimbo Exp.), in MCZ.

ETYMOLOGY: Named for the Xingu River. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from described congeners by the prominent sclerotized ridges on the ventral side of the procursus (figs. 903, 906), and the armature of the chelicerae (fig. 904). The MCP has three male specimens of a closely related species, from "Porto Cercado, MF," differing slightly with respect to procursus shape and cheliceral armature.

MALE (holotype): Total length 2.8, carapace width 1.3; leg 1: (8.9+0.5+8.9+14.9, tarsus missing), tibia 3: 4.0; tibia 1 l/d: 79. Habitus and prosoma shape similar to *M. eberhardi* (cf. figs. 769–771); distance PME-ALE about 80% of PME diameter. Carapace brown, with dark spot behind ocular area, ocular area and clypeus brown, sternum light brown, with darker labium. Chelicerae light brown, with pair of basal humps, three pairs of black-pointed apophyses, and pair of circular depressions (fig. 904). Palps as in figs. 902–903, very strong, dark brown, with distinct retrolateral coxal apophysis, femur proximally with small roundish retrolateral protrusion, distally very enlarged, procursus with distinctive black, sclerotized ridges ventrally and semitransparent flaps dorsally (figs. 903, 906), bulb light brown, with transparent distal elements (fig. 905). Legs brown, tibiae with slightly lighter tips; legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 2.5%. Opisthosoma pale greenish-ochre.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

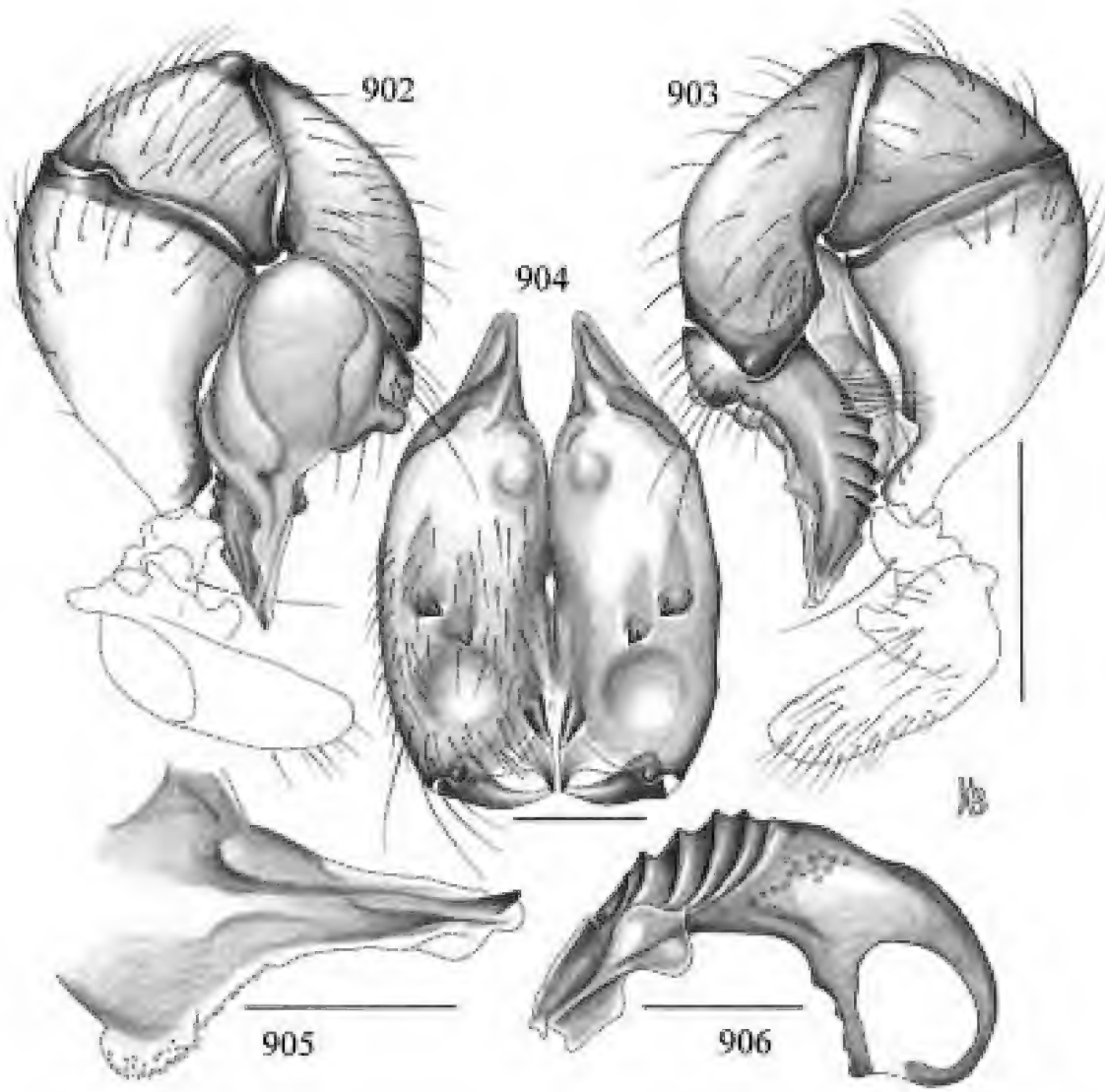
MATERIAL EXAMINED: BRAZIL: *Mato Grosso:* 260 km N Xavantina: type above.

Mesabolivar luteus (Keyserling, 1891), new combination

Figures 907–915

Pholcus luteus Keyserling, 1891: 171–172, figs. 117, 117a.

Litoporus luteus: Moenkhaus 1898: 104. – Mello-Leitão, 1918: 93. (Both Moenkhaus and Mello-Leitão simply translated Keyserling's original description; apart from the transfer to *Litoporus*, no new information was added.)



Figs. 902–906. *Mesabolivar xingu*, n. sp., male holotype. **902**. Left palp, prolateral view. **903**. Left palp, retrolateral view. **904**. Chelicerae, frontal view. **905**. Embolar division of left bulb, prolateral view. **906**. Left procursus, prolateroventral view. Scale lines: 0.5 mm (902–903), 0.2 mm (904–906).

Pholcus imbecillus Keyserling, 1891: 170, figs. 115, 115a. NEW SYNONYMY.

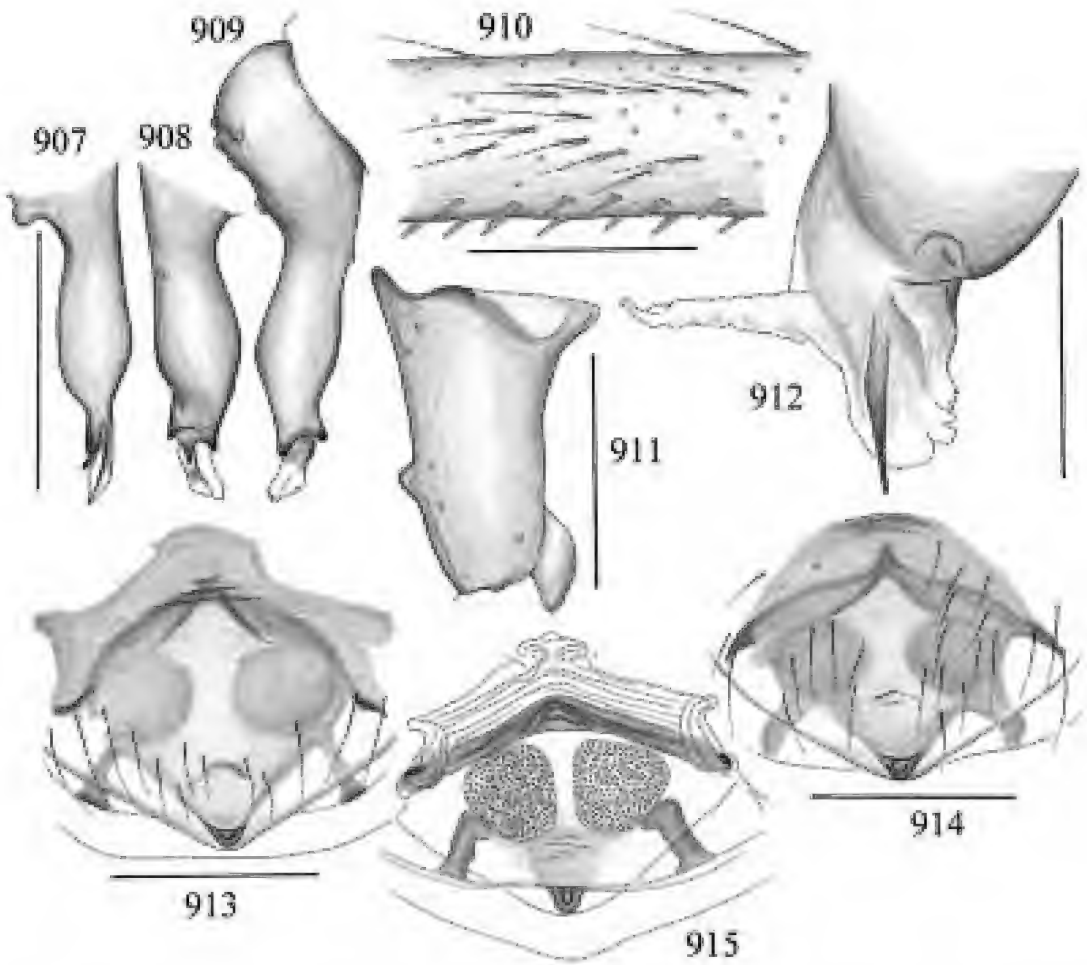
Litoporus imbecilis [sic]: Moenkhaus 1898: 103–104. (Moenkhaus simply translated Keyserling's original description; apart from the transfer to *Litoporus*, no new information was added.)

Litoporus imbecillus: Mello-Leitão, 1918: 93. (Mello-Leitão simply translated Keyserling's original description; no new information was added.)

Litoporus coccineus Simon, 1893b: 479–483, fig. 473. – Huber, 1997b: 587–588, figs. 10–11. NEW SYNONYMY.

Litoporus fulvus Moenkhaus, 1898: 105–107, figs. 4, 4a–c. – Mello-Leitão, 1918: 94. (Mello-Leitão simply copied Moenkhaus's original description and two of his illustrations.) Treated as a junior synonym of *L. imbecillus* by Roewer (1942) but not by Bonnet (1957). NEW SYNONYMY.

JUSTIFICATION OF SYNONYMIES: The male type specimens of *Pholcus luteus* Keyserling,



Figs. 907–915. *Mesabolivar luteus* (Keyserling). **907**. Left procursus, retrolateral (slightly dorsal) view. **908**. Left procursus, prolateral view. **909**. Left procursus and cymbium, retrolateral view. **910**. Left male femur 3, retrolateral view. **911**. Left male palpal femur, prolateral view. **912**. Embolar division of left bulb, prolateral view. **913**. Epigynum of female from Parque Nacional do Iguaçu, ventral view. **914**. Epigynum of female from same locality, ventral view. **915**. Epigynum, dorsal view. Scale lines: 0.3 mm.

Litoporus coccineus Simon, and *Litoporus fulvus* Moenkhaus were compared, and are clearly conspecific. The female type specimens of *Pholcus imbecillus* Keyserling were collected at the same site as the male type specimens of *Pholcus luteus*, and the comparison with new material of both sexes confirms their conspecificity.

JUSTIFICATION OF TRANSFER: This species has some similarities with *Litoporus* in overall habitus and eye pattern, but lacks the characteristic high ratio of femur 1/tibia 1 of *Litoporus*, and shares with typical *Mesabolivar* the pocket in the epigynum. Geographically, *Litoporus* seems to be absent from southern Brazil, while *Mesabolivar* is extremely diverse there.

TYPES: *Pholcus luteus*: three male syntypes from Rio de Janeiro (''Miracena, Fazenda Sergio Potta de Castro''), Brazil; no date (E. A. Göldi), in BMNH (BM 1890.7.1 8310-3), examined. *Pholcus imbecillus*: five female syntypes, and three penultimate males from Rio de Janeiro (''Miracena, Serra Vermella, Fazenda Sergio Potta de Castro'') Brazil; no date (E. A. Göldi), in BMNH (BM

1890.7.1 8314.20), examined. (The vial includes one specimen of another species.) *Litoporus coccineus*: male lectotype, 6♂ paralectotypes from Rio de Janeiro, "Curuçá," Brazil; no date (see Huber, 1997b), in MNHN (6918), examined. *Litoporus fulvus*: three male syntypes from Iguape, Rio de Janeiro, Brazil; Dec. 1897 (collector not given), in MZSP (DZ 3030), examined.

DIAGNOSIS: Closely related to *M. levii*, distinguished by the male cheliceral apophyses (one pair instead of three), and the more complicated tip of the procursus (figs. 907–909).

MALE (combined from all types; see Keyserling (1891) for detailed measurements of a *Pholcus luteus* syntype, and Huber (1997b) for detailed measurements of the *Litoporus coccineus* types, and general habitus and palp drawings): Total length (N = 2) 2.5–3.3; carapace width (N = 5) 1.1–1.4; femur 1 (N = 6) 10.1–11.2; tibia 1 (N = 6) 9.2–10.4; tibia 1 l/d (N = 2) 77–78. Prosoma pale ochre-yellow to ochre brown, carapace with thoracic groove, eight eyes on moderately elevated ocular area; distance PME-ALE about 65% of PME diameter. Chelicerae with pair of prominent frontal apophyses and two pairs of more proximal, quite indistinct humps (cf. fig. 10C in Huber, 1997b; most proximal pair of humps missing in *Litoporus fulvus* syntypes). Palps with round but distinct retrolateral coxal apophysis, femur with prominent basal apophysis, small humps dorsally and ventrodistally (fig. 911), procursus simple, with three tiny sclerotized tips and transparent laminae (figs. 907–909), bulb with characteristic translucent projection and terminal spinelike apophysis (fig. 912). Legs with light distal tips on femora and tibiae, with ventral band of short spines on each femur in two *Pholcus luteus* syntypes (fig. 910; most spines seem to be on femora 3 and 4, but in most types there were either no hairs left on legs, or no legs at all). All legs without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 with ~ 30 pseudosegments (very distinct distally). Opisthosoma without markings.

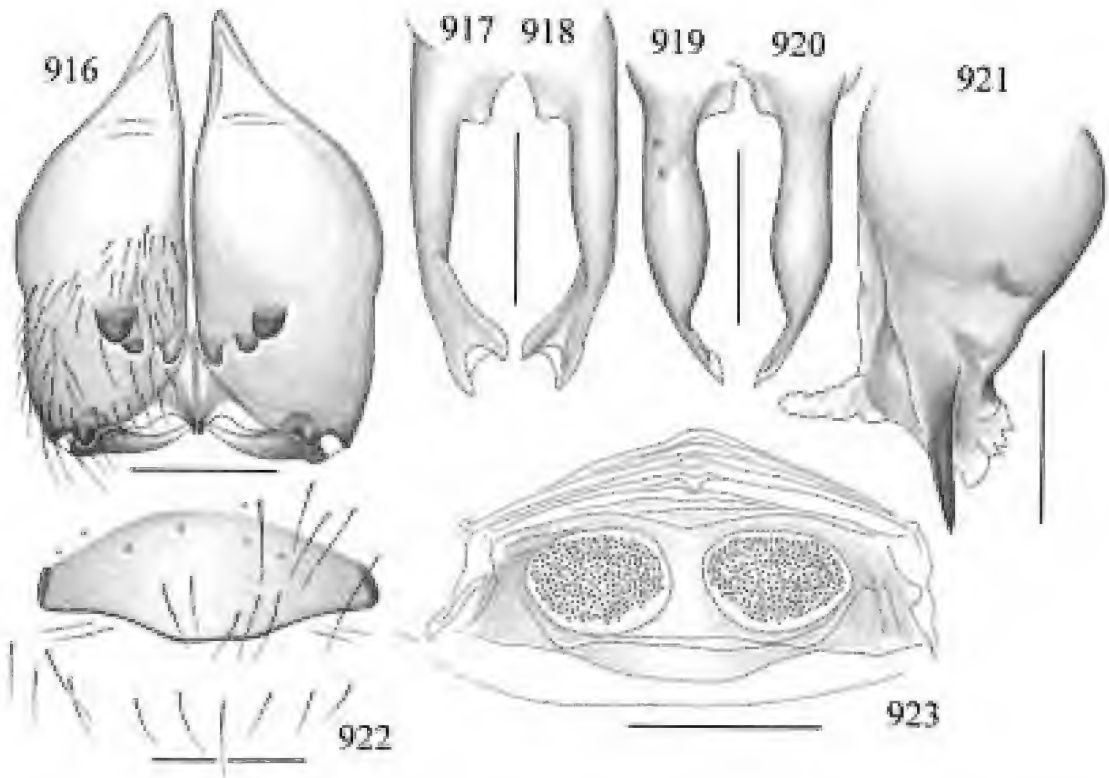
VARIATION: In more recently collected males (from MCN and MCP) the prosoma, legs and genital plate were rather orange. In these specimens, spines were usually found on all femora, though in lowest numbers on femur 1, and the chelicerae lacked the proximal pair of humps (like in the *Litoporus fulvus* types). Even in these specimens the opisthosoma was monochromous. Tibia 1 in three males from Rio Grande do Sul: 9.3, 10.1, 10.7.

FEMALE: In general similar to male, but paler (i.e., not orange), with brownish clypeus. Legs with distinct darker rings on femora (subdistally), patellae, tibiae (proximally and subdistally), and metatarsi (proximally). Tibia 1 in 5 females from Rio Grande do Sul: 6.3–7.5 ($\bar{x}$ = 7.0). Epigynum light brown, usually with greenish arch in front, but shape of arch varies widely (e.g., figs. 913–914); posteriorly with slightly protruding scape with sclerotized median pocket (figs. 913–914). Dorsal view as in fig. 915 (the epigyna illustrated in figs. 913–914 were not visibly different in dorsal view). Bluish band behind epigynum.

Pholcus imbecillus syntypes: Total length ~ 3.0, carapace width 1.2. Leg measurements in one syntype: leg 1: 32.3 (7.8+0.4+7.5+14.6+2.0), tibia 2: 4.6, tibia 3: 3.2, tibia 4: 4.2; tibia 1 l/d: 69.

DISTRIBUTION: Known from southeastern Brazil (Rio de Janeiro, São Paulo, Rio Grande do Sul, Paraná) and northeastern Argentina.

MATERIAL EXAMINED: BRAZIL: *Rio de Janeiro:* all types above. *São Paulo*: Parque Estadual de Carlos Botelho, São Miguel Arcanjo, Oct. 14, 1990 (A. B. Bonaldo), 2♂ (MCN 20470); *Rio Grande do Sul*: Salto do Yucumá, Parque Estadual Doturo Tenente, Jan. 16, 1985 (A. A. Lise), 1♀ (MCN 13.003 part); Novo Hamburgo, Oct. 20, 1986 (C. J. Becker), 1♂ (MCP 225); Morro Santana, Porto Alegre, Dec. 15, 1989 (A. A. Lise), 1♀ (MCN 19197); Parque Estadual do Turvo, Derrubadas, Feb. 1, 1996 (A. B. Bonaldo, A. Kury, R. Pinto-da-Rocha), 1♂ (MCN 27097); *Paraná*: Serra da Graciosa, Morretes, Jan. 9–20, 1995 ("Lab. Aracnologia"), 1♂ (MCP 7208 part); Parque Nac. do Iguaçu, Foz do Iguaçu, Mar. 29–30, 1993 (A. B. Bonaldo), 1♀ (MCN 23518 part); Refúgio Biológico de Bela Vista, Foz do Iguaçu, Nov. 9–11, 1991 (A. B. Bonaldo), 2♂ 3♀ 2 juveniles (MCN 21817). ARGENTINA: *Mi-*



Figs. 916–923. *Mesabolivar levii*, n. sp., male holotype and female paratype. **916**. Male chelicerae, frontal view. **917–920**. Left procursus, prolateroventral (917), retrolaterodorsal (918), prolateral (919), and retrolateral (920) views. **921**. Left genital bulb, prolateral view. **922**. Epigynum, ventral view. **923**. Epigynum, dorsal view. Scale lines: 0.2 mm.

siones: Pto. Iguazú, Oct. 1954 (Schiapelli), 2♀ (AMNH).

Mesabolivar levii, new species

Figures 916–923

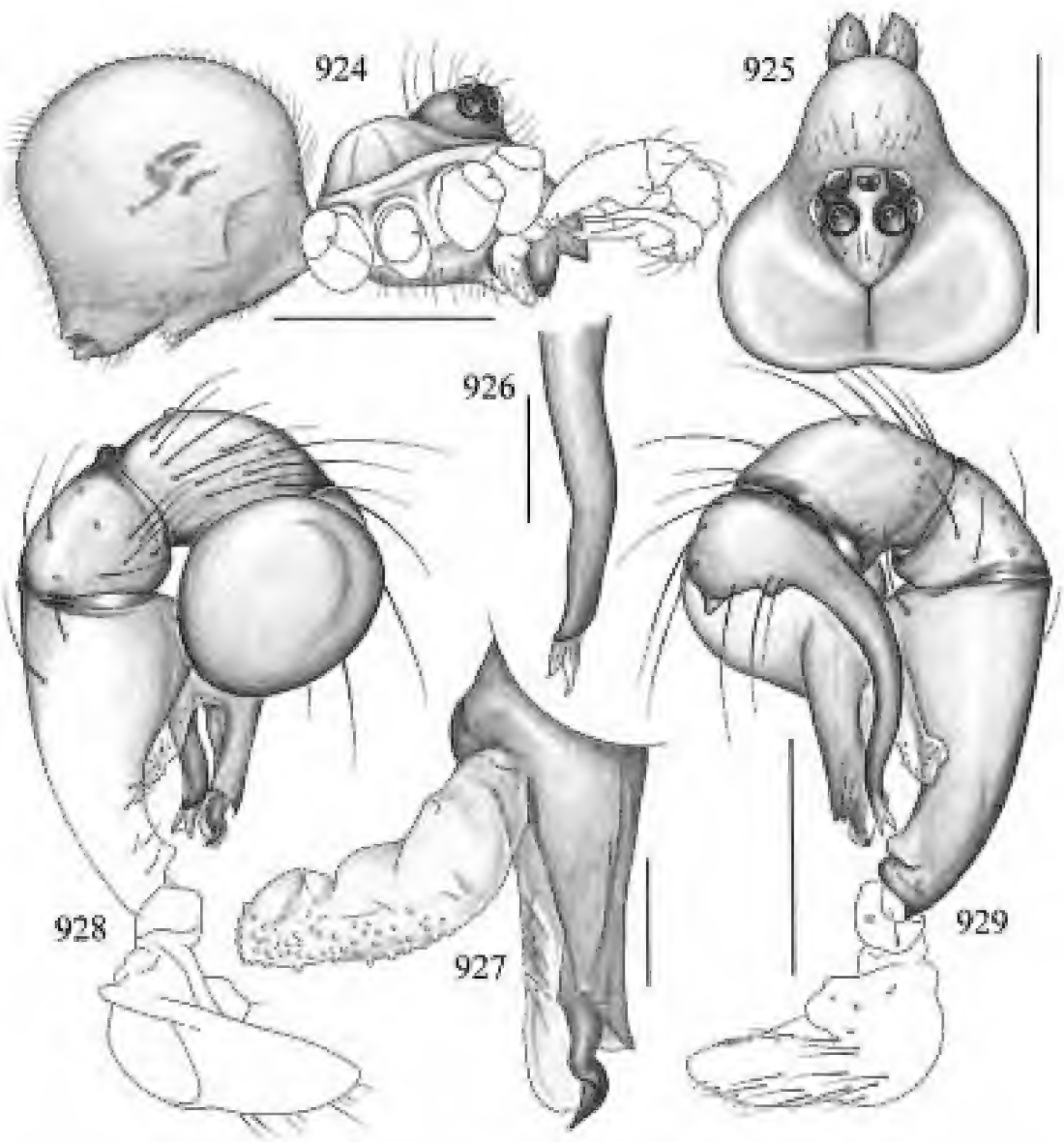
TYPES: Male holotype, 1♀ paratype from Serra dos Orgãos, Rio de Janeiro, Brazil; 1000–1800 m elev., in forest, Apr. 19, 1965 (H. W. Levi), in MCZ.

ETYMOLOGY: Named for the collector.

DIAGNOSIS: Closely related to *M. luteus*, distinguished by the male cheliceral apophyses (three pairs instead of one: fig. 916), and the tip of the procursus (simply bifurcated instead of three tips: figs. 917–920).

MALE (holotype): Total length 2.6, carapace width 1.1; leg 1: 41.7 (10.0+0.4+9.9 +19.7+1.7), tibia 2: 6.4, tibia 3: 4.3, tibia 4: 5.7; tibia 1 l/d: 83. Prosoma pale ochre-yellow, shape as in *M. lutues* (cf. figs. 10A–B in Huber, 1997b); distance PME-ALE about 70% of PME diameter. Chelicerae with three pairs of brown apophyses (fig. 916). Palps generally as in *M. luteus* (cf. figs. 11A–B in Huber, 1997b), bulb with short translucent projection and terminal spinelike apophysis (fig. 921), procursus with simple, bifurcated tip (figs. 917–920). Legs pale ochre-yellow, apparently without spines (lost?), without curved and vertical hairs; tarsus 1 with over 30 pseudosegments (difficult to count). Opisthosoma pale grayish-ochre, without markings.

FEMALE: Total length 3.2, carapace width 1.2; tibia 1: 6.9. Habitus as in male. Distinct dark rings on femora (subproximally), tibiae (proximally and subdistally), and metatarsi (proximally). Clypeus, chelicerae, palpal coxae, and labium brown. Coxae of legs 3 also brown. Epigynum simple flat plate (fig.



Figs. 924–929. *Mesabolivar difficilis* (Mello-Leitão), male. **924**. Habitus, lateral view. **925**. Prosoma, dorsal view. **926**. Tip of left procursus, prolateral view. **927**. Embolar division of left bulb, prolateral view. **928**. Left palp, prolateral view. **929**. Left palp, retrolateral view. Scale lines: 1.0 mm (924–925), 0.4 mm (928–929), 0.1 mm (926–927).

922), internal genitalia with pair of round pore plates (fig. 923).

DISTRIBUTION: Known only from type locality.

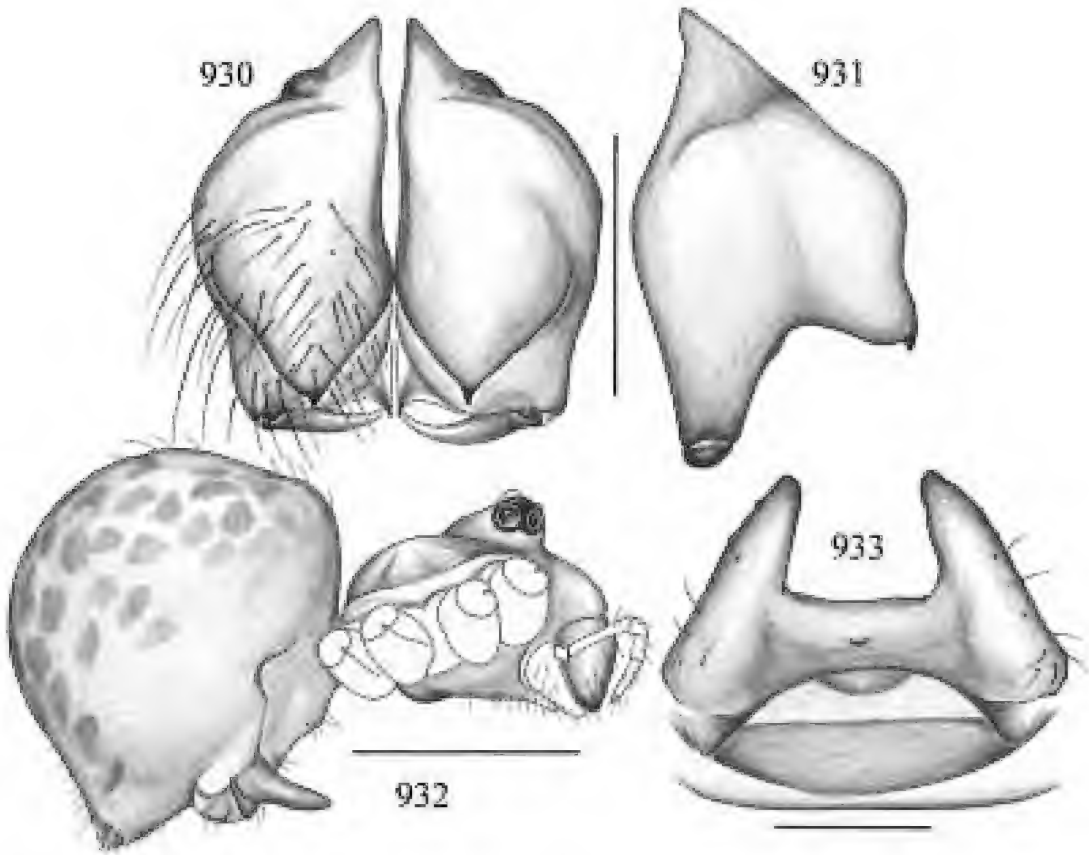
MATERIAL EXAMINED: BRAZIL: *Rio de Janeiro:* types above.

Mesabolivar difficilis (Mello-Leitão, 1918), new combination

Figures 924–933

Physocyclus difficile Mello-Leitão, 1918: 112–113, figs. 28–29.

Physocyclus difficilis: Bonnet, 1958: 3650.



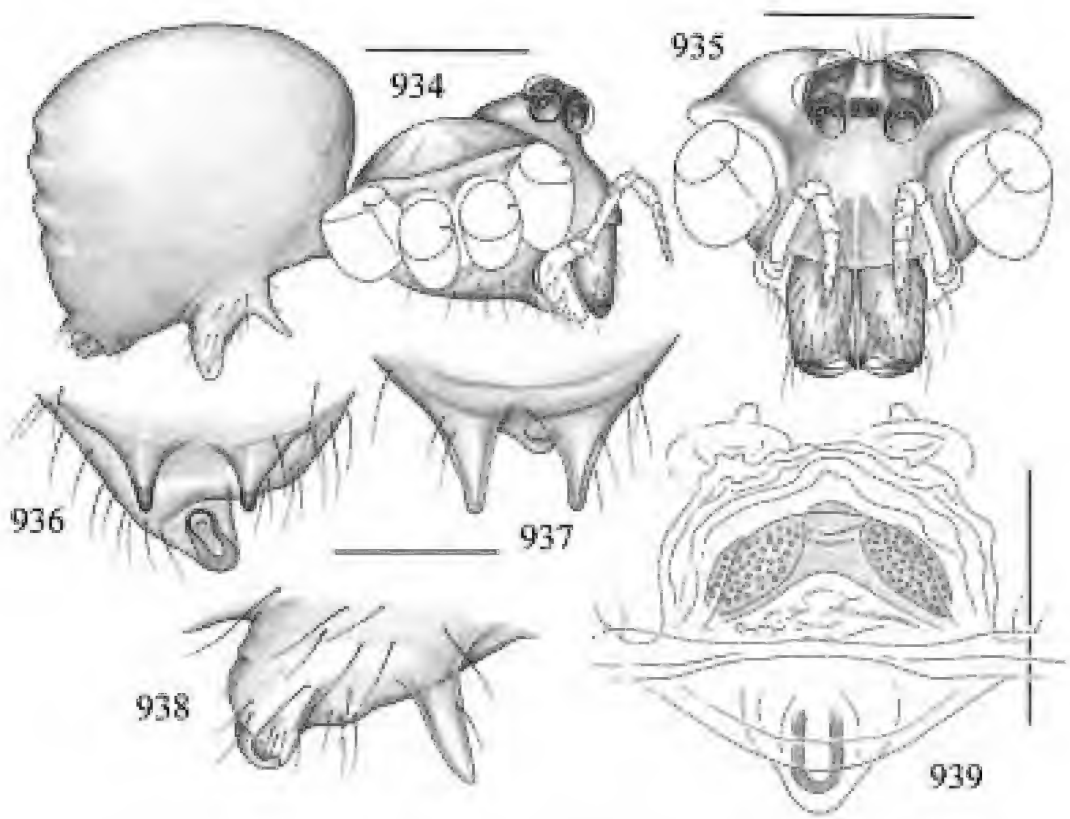
Figs. 930–933. *Mesabolivar difficilis* (Mello-Leitão). **930–931**. Male chelicerae, frontal and lateral views. **932**. Female habitus, lateral view. **933**. Epigynum, ventral (slightly posterior) view. Scale lines: 1.0 mm (932), 0.3 mm (930–931, 933).

TYPES: Four males and four females (type series?) (see Note below) from Pinheiro, Rio de Janeiro, Brazil; no date (C. de Mello-Leitão), in MNRJ, examined.

NOTE: Mello-Leitão described only the female, and the material examined here may not be the material used for the original description. However, the epigynum has the same characteristic shape as in Mello-Leitão's specimens, and the present material is from the type locality, suggesting that the material examined is in fact at least conspecific with Mello-Leitão's original specimens.

DIAGNOSIS: Distinguished from congeners by the large pair of apophyses on the epigynum (figs. 932–933), the voluminous apophyses on the male chelicerae (figs. 930–931), and the transparent ventral projection on the bulb (fig. 927).

MALE ("syntype"): Total length 2.4, carapace width 1.2; leg 1: (4.3+0.4+4.6+7.4, tarsus missing), tibia 2: 2.8, tibia 3: 1.9, tibia 4: 3.0; tibia 1 l/d: 36. Habitus as in fig. 924; carapace light brown, with distinct thoracic groove, ocular area moderately elevated, with eight eyes (fig. 925). Chelicerae with pair of voluminous frontal apophyses ending in small pointed tips (figs. 930–931). Palps as in figs. 928–929, with distinct retrolateral coxal apophysis, femur proximally with small retrolateral apophysis, procursus simple curved apophysis ending in pair of transparent flaps (fig. 926), bulb more complicated, with sclerotized projection provided with hooked apophysis and characteristic transparent projection provided with many small humps (fig. 927). Legs light brown, without rings, without spines and vertical hairs. Op-



Figs. 934–939. *Mesabolivar simoni* (Moenkhaus), female lectotype. **934**. Habitus, lateral view. **935**. Prosoma, frontal view. **936**. Epigynum, ventral (slightly frontal) view. **937**. Epigynum, frontal view. **938**. Epigynum, lateral view. **939**. Epigynum, dorsal view. Scale lines: 0.5 mm (934–935), 0.2 mm (936–939).

isthosoma globular (fig. 924), pale greenish, without spots (in two males it seems that there once were several large dark spots).

FEMALE ("syntype"): Total length 2.3, carapace width 1.1; leg 1: 13.3 (3.3+0.4+3.6 +5.2+0.8), tibia 2: 2.2, tibia 3: 1.7, tibia 4: 2.6. Habitus as in male (fig. 932); sternum posteriorly with slightly elevated humps. Epigynum with pair of large, distinctive apophyses (figs. 932–933). (At the time I had this material in loan I did not yet actively look for a median pocket, which I may have overlooked on the frontal side of the epigynum.)

VARIATION: Carapace width in other material (males and females) 1.0–1.1.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BRAZIL: *Rio de Janeiro:* Pinheiro: types above.

Mesabolivar simoni (Moenkhaus, 1898), new combination

Figures 934–939

Blechroscelis simoni Moenkhaus, 1898: 101–103, figs. 3, 3a–b. – Mello-Leitão, 1918: 107 (copied from Moenkhaus).

TYPE: Female lectotype (designated herein, see Note below), from Poço Grande, São Paulo, Brazil; Feb. 1898 (no collector given), in MZSP (DZ 3236), examined.

NOTE: The vial contains another specimen that is not conspecific (probably a mature female). Moenkhaus's original description leaves no doubt about which has to be the lectotype.

DIAGNOSIS: Easily distinguished from congeners by the scapelike posterior projection with pocket on the epigynum and the paired anterior apophyses (figs. 934, 936–938).

MALE: Unknown.

FEMALE (lectotype, in poor state): Measurements copied from Moenkhaus, 1898 (my measurements gave only slightly different values, and only leg 2 is left): Total length 1.8, carapace width 0.7; leg 1: 10.4 (2.5+0.3+2.7+4.2+0.8), tibia 2: 1.8, tibia 3: 1.5, tibia 4: 2.3. Entire animal pale ochre-yellow; prosoma shape as in figs. 934–935, with distinct thoracic groove and eight eyes on moderately elevated ocular area. Opisthosoma globular, with very distinctive epigynum: posterior scapelike process provided with a pocket, and a pair of anterior cone-shaped processes (figs. 936–938). Internally with a pair of oval pore plates (fig. 939).

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BRAZIL: *São Paulo:* Poço Grande: type above.

Mesabolivar banksi (Moenkhaus, 1898), new combination

Figures 940–946

Coryssocnemis banksi Moenkhaus, 1898: 96–98, figs. 2, 2a–d. – Mello-Leitão, 1918: 102 (copied from Moenkhaus).

TYPES: Male lectotype (designated herein) and 3♀ paralectotypes from Poço Grande, São Paulo, Brazil; Jan. 1898 (no collector given), in MZSP (DZ 3024), examined.

DIAGNOSIS: Easily distinguished from congeners by the shape of the procursus tip (figs. 940–941), and the large protrusions on the epigynum (figs. 945–946).

MALE (lectotype, in poor state; measurements copied from Moenkhaus, 1898—my measurements gave only slightly different values, and leg 1 is lost): Total length 2.2, carapace width 0.9; leg 1: 33.0 (7.8+0.4 +8.3+14.2+2.4), tibia 2: 5.3, tibia 3: 3.6, tibia 4: 5.3. Prosoma shape as shown for female (figs. 943–944), pale ochre-yellow. Chelicerae missing (according to Moenkhaus provided with pair of very conspicuous apophyses; see his figs. 2d and 2d'). Palps as in fig. 942, without retrolateral coxal apophysis, femur characteristically curved and enlarged distally, with rounded retrolateral apophysis proximally, procursus curved, at tip with prolateral spine (figs. 940–941), bulbs shrunken, apparently simple, pear-shaped. Legs pale ochre-yellow, almost no hairs left. Opisthosoma shrunken, shape probably similar to female (cf. fig. 943).

FEMALE (paralectotypes): Carapace width 0.9–1.0; tibia 1: 5.6–6.0. Habitus as in figs. 943–944, with very large, prominent epigynum consisting of bifurcated anterior apophysis and (apparently) median pocket (figs. 945–946).

DISTRIBUTION: Known only from type locality.

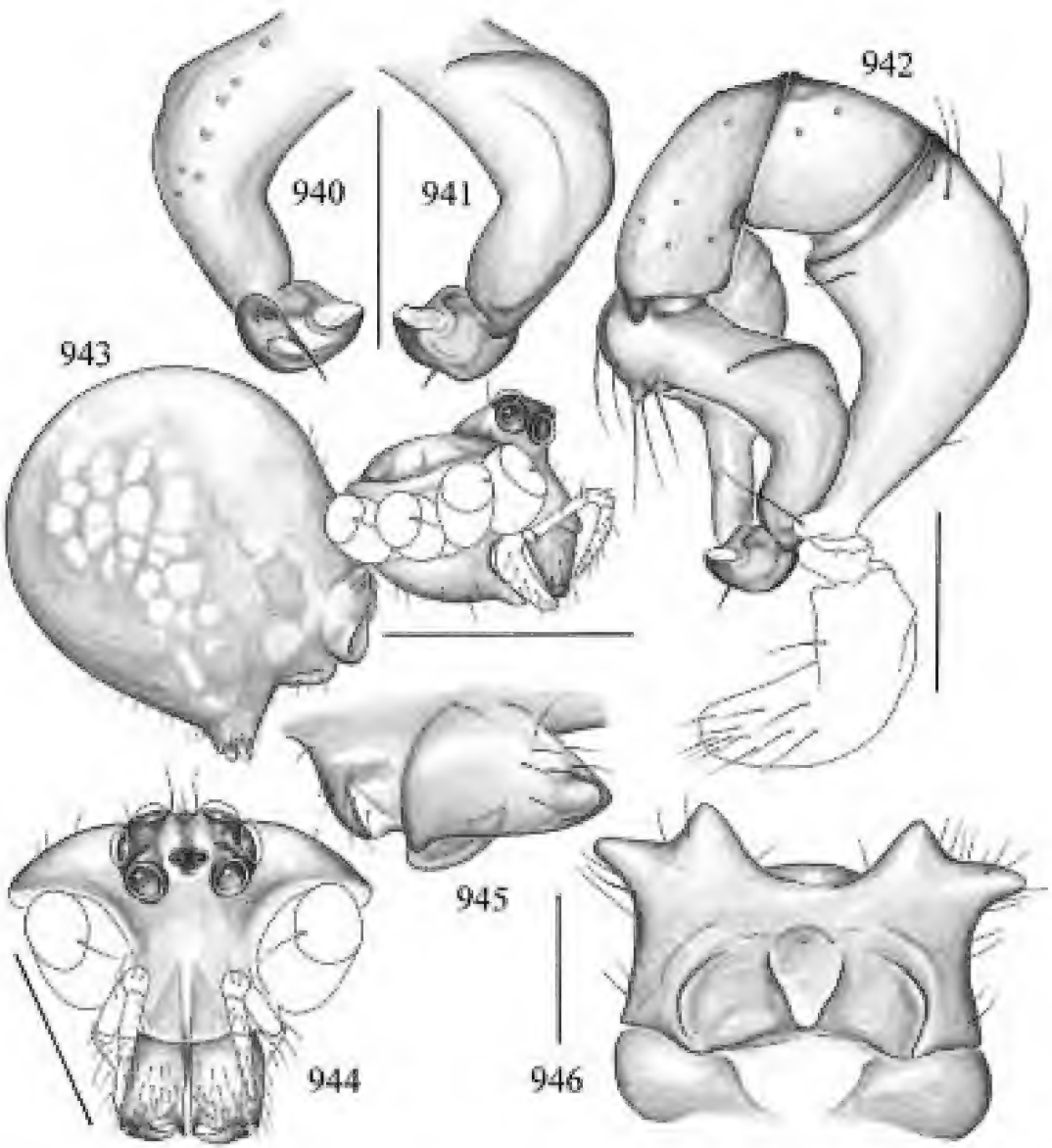
MATERIAL EXAMINED: BRAZIL: *São Paulo:* Poço Grande: types above.

CARAPOIA GONZÁLEZ-SPONGA, 1998

Carapoia González-Sponga, 1998: 18–19 (type species by original designation *C. paraguaensis* González-Sponga, 1998; examined).

DIAGNOSIS: Medium-sized (total length 2.5–4.5 mm), fairly dark, eight-eyed pholcids with long legs; distinguished from similar genera (*Mesabolivar*, *Mecoloesthus*, *Coryssocnemis*) by the modified hairs on the male chelicerae (e.g., figs. 947, 955, 967), and by the pair of diverging sclerites behind the epigynum (e.g., figs. 953, 960, 971).

DESCRIPTION: Total length ~ 2.5–4.5 mm. Carapace with distinct thoracic groove, ocular area moderately elevated, with eight eyes, AME smallest; distance PME-ALE relatively large (50–80% of PME diameter). Sternum without humps. Male clypeus unmodified. Male chelicerae with modified (globular or cone-shaped) hairs frontally, sometimes on protrusion; without stridulatory ridges laterally. Male palpal coxa with retrolateral apophysis, femur with large roundish retrolateral apophysis proximally, conspicuously enlarged distally; procursus simple (figs. 950, 958, 965); bulb large, with strong distal spine and conspicuous whitish globular area dorsally on embolar division (figs. 952, 956, 970). Tarsal organ exposed (examined: *C. fowleri*, n. sp.; *ocaina*, n. sp.). Legs very long (leg 1 about 11–13 × body length; tibia 1 l/d about 70–100); leg formula 1423; legs without spines and vertical hairs; sometimes (always?) with curved hairs (on femora and/or tibiae); retrolateral trichobothrium of tibia 1 very proximal [at ~ 3%, not seen in *C. genitalis* (Moenkhaus)]; tarsus with ~ 25–30 pseudosegments (unknown in *C. genitalis*).



Figs. 940–946. *Mesabolivar banksi* (Moenkhaus), male lectotype and female paralectotype. **940**. Left procursus, prolateral view. **941**. Left procursus, retrolateral view. **942**. Left palp, retrolateral view. **943**. Female habitus, lateral view. **944**. Female prosoma, frontal view. **945–946**. Epigynum, lateral and ventral views. Scale lines: 1.0 mm (943), 0.5 mm (944), 0.3 mm (940–942, 945–946).

Opisthosoma elongate, with or without darker spots. Male gonopore without epiandrous spigots (examined: *C. fowleri*, *ocaina*: fig. 131). ALS with only one piriform gland spigot each (examined: *C. fowleri*, *ocaina*: fig. 179), other spinnerets typical for family.

Sexual dimorphism slight; legs of females often with distinct dark rings on femora (distally) and tibiae (proximally and subdistally); epigynum dark flat plate, with distinctive pair of sclerites diverging behind plate.

MONOPHYLY: The four species included share the modified hairs on the male chelicerae and the diverging sclerites behind the epigynum; *C. genitalis* is included tentatively, as it does not share an additional set of

Map 7. Known distribution of the genus *Carapoia* González-Sponga. *C. paraguaensis* González-Sponga (circles); *C. ocaina*, n. sp. (dark squares); *C. fowleri*, n. sp. (light squares); *C. genitalis* (Moenkhaus) (diamond).

characters that unites the other three species (globular outgrowth dorsally on embolar division, details of procursus shape).

GENERIC RELATIONSHIPS: The genus is clearly part of the New World clade: male palpal coxa with retrolateral apophysis, epiandrous spigots absent, ALS piriform gland spigots reduced to one, thoracic groove present, exposed tarsal organ, large distance PME-ALE. Otherwise, the phylogenetic relationships are obscure. The close relationship with *Chibchea* proposed by the cladogram in appendix 2 is based on the presence of curved hairs on legs and is probably an artifact.

SPECIFIC RELATIONSHIPS: The three northern species (*C. paraguaensis*, *fowleri*, *ocaina*) are closely related (see Monophyly), whereas *C. genitalis* from southeastern Brazil stands separate and is included tentatively.

DISTRIBUTION: Widely distributed in northern South America (map 7); *C. genitalis* from southeastern Brazil is included tentatively.

COMPOSITION: The genus as construed here includes four named species, all of which are treated below. Two of the species are newly described.

Carapoia paraguaensis González-Sponga, 1998

Figures 947–954

Carapoia paraguaensis González-Sponga, 1998: 19–21, figs. 1–10.

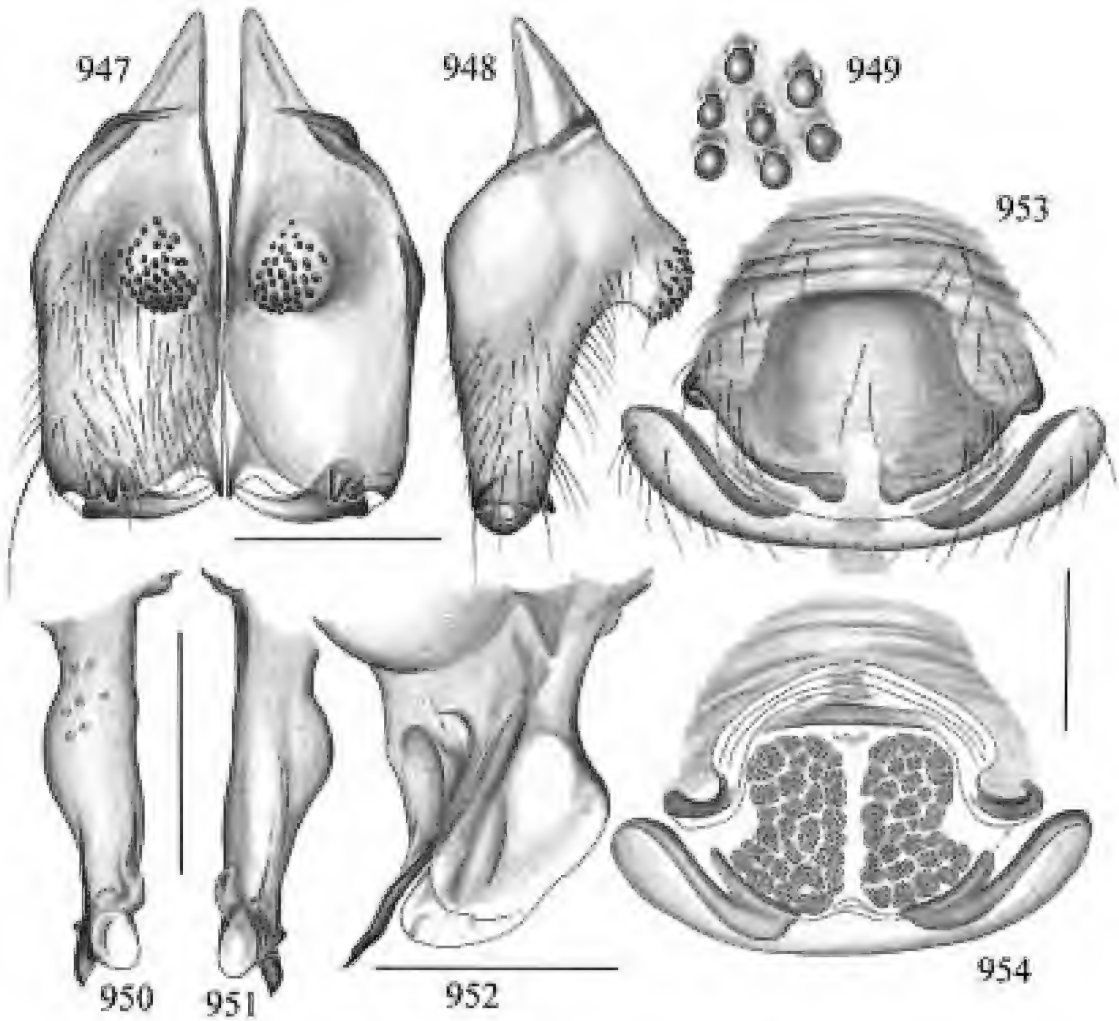
TYPES: Male holotype, 1♂ 5♀ paratypes, 2 juveniles from Rio Carapo, at base of tepui Guaiquinima, Dept. Heres, Bolívar, Venezuela; Feb. 17, 1980 (L. Sanabria), in collection González-Sponga (1178a, b), not examined.

DIAGNOSIS: Distinguished from congeners by the high number of modified hairs on prominent projections of the male chelicerae (figs. 947–948), the slender bulbal apophysis (fig. 952), and details of the procursus (figs. 950–951).

MALE (Guyana, Kartabo): Total length ~ 3.2 (opisthosoma damaged), carapace width 1.4; leg 1: (9.7+0.5; rest missing), tibia 2: 6.2, tibia 3: 4.6, tibia 4: 5.7. Habitus very similar to *C. fowleri* (cf. fig. 962); carapace orange-ochre, only thoracic groove blackish; ocular area moderately elevated (prosoma in general very similar to *Coryssocnemis simla*, cf. figs. 982–983), orange-ochre; distance PME-ALE about 70% of PME diameter. Sternum rather orange (1.0 wide, 0.6 long); chelicerae with pair of large apophyses proximally, each provided with ~ 40 modified hairs, and pair of small distal apophyses (figs. 947–948). Palps in general as in *C. fowleri* (cf. figs. 963–964), procursus simple (figs. 950–951), bulb with conspicuous whitish globular area dorsally on embolar division, and slender apophysis (fig. 952). Legs orange-ochre, tibiae with light tips, no dark rings visible; legs without spines, without curved and vertical hairs. Opisthosoma pale ochre, shape as in *C. fowleri* (cf. fig. 962).

VARIATION: Tibia 1 in 3 other males examined: 8.3, 9.6, 12.1; tibia 1 in male holotype: 11.4; leg 1 in male from Corocito, Bolívar, Venezuela: 40.4 (9.5+0.5+9.6+18.8 +2.0), tibia 1 l/d: 80; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 with over 25 pseudosegments; two of the loose legs in that vial have curved hairs on the tibiae (as in *C. fowleri*), but not all the legs seem to be from the specimen.

FEMALE: In general similar to male. Carapace with brown lateral bands and brown Y mark. Sternum with brown spot anteriorly,

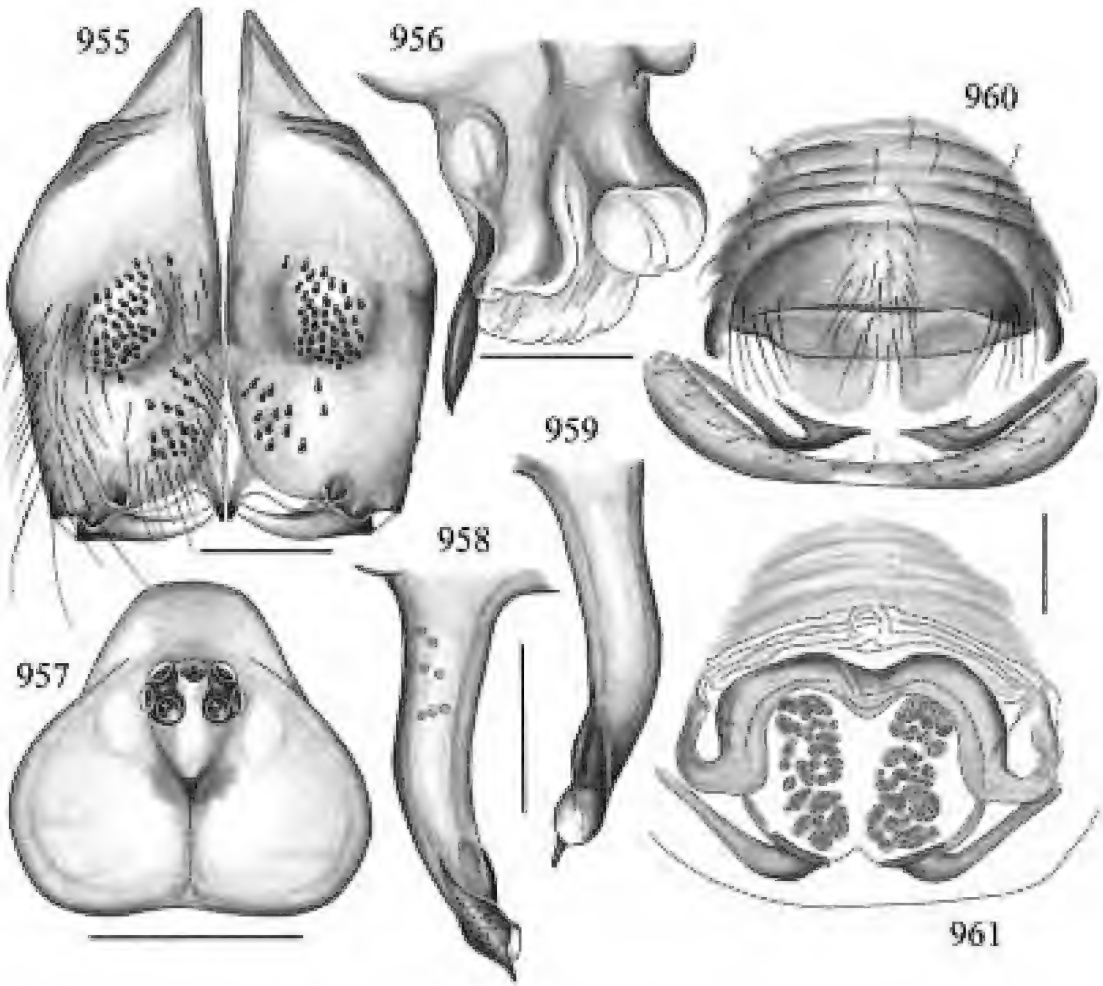


Figs. 947–954. *Carapoia paraguaensis* González-Sponga. **947–948**. Male chelicerae, frontal and lateral views. **949**. Modified hairs on male chelicerae. **950**. Left procursus, prolateral view. **951**. Left procursus, retrolateral view. **952**. Embolar division of left bulb, prolateral view. **953**. Epigynum, ventral view. **954**. Epigynum, dorsal view. Scale lines: 0.3 mm (949 without scale).

clypeus with brown mark. Legs with dark rings on femora (subdistally) and tibiae (proximally and subdistally). Tibia 1 (N = 10) 5.9–8.9 ($\bar{x}$ = 7.2). Opisthosoma with several dark spots, dorsally and laterally. Epigynum and internal genitalia as in figs. 953–954.

DISTRIBUTION: Known from Guyana, eastern Venezuela and northern Brazil (map 7).

MATERIAL EXAMINED: GUYANA: Kartabo (6°23′N, 58°42′W), 1924 (collector not given), 1♂ in AMNH. Sauriwau River (3°09′N, 59°54′W), "pusc. Tacuta," Oct. 23, 1937 (collector not given), 1♂ in MZF. Kaietur, July 30, 1911 (F. E. Lutz), 1♀ in AMNH. Isherton ("Ishear-tun"), 10 mi E Rupunini River, Nov. 1937 (W. G. Hassler), 1♀ in AMNH. BRAZIL: *Roraima*: Estação Ecológica de Maracá, Ilha de Maracá, Alto Alegre, July 20, 1987 (A. A. Lise), 3♀ in MCN (17583); same data, but July 18, 1987: 2♀ in MCN (17582); Ilha de Maracá, Jan. 31–Feb. 14, 1992 (A. A. Lise), 1♂ 9♀ in MCP (1851); same locality, May 1992 (M. Nascimento), 1♀ in MCP (1967). VENEZUELA: *Bolívar*: 10 km N Corocito, Rio Caura



Figs. 955–961. *Carapoia ocaina*, n. sp. **955**. Male chelicerae, frontal view. **956**. Embolar division of left bulb, prolateral view. **957**. Male prosoma, dorsal view. **958**. Left procursus, prolateral view. **959**. Left procursus, retrolateral view. **960**. Epigynum, ventral view. **961**. Epigynum, dorsal view. Scale lines: 1.0 mm (957), 0.2 mm (955–956, 958–961).

(7°12′N, 64°59′W), rain forest, June 18–Aug. 3, 1987 (S. & J. Peck), 1♂ in AMNH.

Carapoia ocaina, new species

Figures 19–20, 131, 179, 955–961

TYPES: Male holotype, 5♂ 8♀ paratypes from Rio Samiria (4°43′S, 74°18′W), Dept. Loreto, Peru; May 21–28, 1990 (D. Silva "& Ernesto"), in MUSM.

ETYMOLOGY: The species name is a noun in apposition honoring the Ocaina, who were once a large tribe in northern Peru and southern Colombia. They were devastated by the rubber boom of around 1900, and today number only a few hundred people.

DIAGNOSIS: Close relative of *C. paraguaensis*, but with additional modified hairs distally on the male chelicerae (fig. 955); further distinguished by details of the procursus (figs. 958–959).

MALE (holotype): Total length 4.4, carapace width 1.8; leg 1: 50.2 (12.3+0.6 +11.9+23.1+2.3), tibia 2: 7.1, tibia 3: 5.1, tibia 4: 6.3; tibia 1 l/d: 74. Habitus very similar to *C. fowleri* (cf. fig. 962); distance PME-ALE about 50% of PME diameter. Carapace orange-ochre, slightly darker behind

ocular area, clypeus slightly darker medially; sternum orange. Chelicerae with pair of large apophyses proximally (fig. 955; not as prominent as in *C. paraguaensis*, cf. fig. 948), each provided with ~ 40 modified hairs (figs. 19–20); ~ 10 further modified hairs more distally, and pair of small distal apophyses (fig. 955). Palps in general as in *C. fowleri* (cf. figs. 963–964), procursus simple (figs. 958–959), bulb with conspicuous whitish globular area dorsally on embolar division, and strong apophysis (fig. 956). Tarsal organ exposed. Legs brown, only tips of tibiae whitish, and area around patellae lighter, no dark rings; legs without spines and vertical hairs, with many curved hairs (femur 1 dorsally, tibia 1 dorsally and ventrally, tibia 4 dorsally, not on tibiae 2 and 3, not on metatarsi); retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 with ~ 30 pseudosegments. Opisthosoma monochromous greenish-ochre, shape as in *C. fowleri* (cf. fig. 962); gonopore without epiandrous spigots (fig. 131); ALS with only one piriform gland spigot each (fig. 179).

VARIATION: Tibia 1 in 7 other males from type locality: 11.3–12.3 ($\bar{x}$ = 11.6), tibia 1 in 8 males from Manaus: 9.9–10.9 ($\bar{x}$ = 10.4); some males (apparently more recently molted individuals) with lighter legs and dark spots on opisthosoma.

FEMALE: In general similar to male, but legs with dark rings on femora (subdistally) and tibiae (proximally and subdistally). Tibia 1 in 11 females from type locality: 8.3–9.6 ($\bar{x}$ = 8.8). Opisthosoma with several dark spots laterally, sometimes also dorsally. Epigynum and internal genitalia as in figs. 960–961; most females with conspicuous plug.

DISTRIBUTION: Known from northern and central Peru and northwestern Brazil (map 7).

MATERIAL EXAMINED: PERU: *Loreto*: Rio Samiria: types above; same data but May 11–18, 1990 (D. Silva), 9♂ 8♀ in MUSM; same data, but May 1990 (T. Erwin "et al."), 3♀ in MUSM; Alto Rio Samiria (5°07′S, 75°28′W), May 13, 1990 (D. Silva), 2♂ 1♀ in MUSM; Jenaro Herrera (4°55′S, 73°44′W), ~ 100 m elev., Aug. 26, 1988 (D. Silva), 4♂ 5♀ in MUSM; same locality, Dec. 1990 (B. Hakquziev), 1♂ 1♀ in MUSM; Ucayali, Pacullpa: Ivita, Rio Neshuya, July 19, 1986 (D. Silva), 1♂ in MUSM; Ucayali, Pacullpa, Bosque Nacional Alexander von Humboldt, July 30, 1986 (D. Silva), 1♀ in MUSM; Parque Nacional Pacaya-Samiria, Pithecia (5°06′S, 74°50′W), Aug. 15, 1989 (D. Silva), 1♂ 1♀ in MUSM; Cocha Shinguito (5°08′S, 74°45′W), May 27, 1990 (T. Erwin "et al."), 1♀ assigned tentatively, in MUSM; Pastaza, rain forest, Aug. 1973 (J. C. Olin), 1♀ in MCZ, assigned tentatively. *Huánuco*: Dantas-La Molina, Quebrada Sapete, SW of Puerto Inca (9°38′S, 75°00′W), 270 m elev., May 24–27, 1987 (D. Silva), 7♂ 3♀ (5 vials) in MUSM. *Amazonas*: Rio Alto Marañon, between Rios Cempa and Nieva (~ 4°40′S, 78°00′W), Sept. 10–24, 1924 (Klug), 1♂ in AMNH. BRAZIL: *Amazonas*: Manaus, Igapó Tarumã Mirím, Oct. 5, 1987 (H. Höfer), 10♂ in SMNK.

Carapoia fowleri, new species

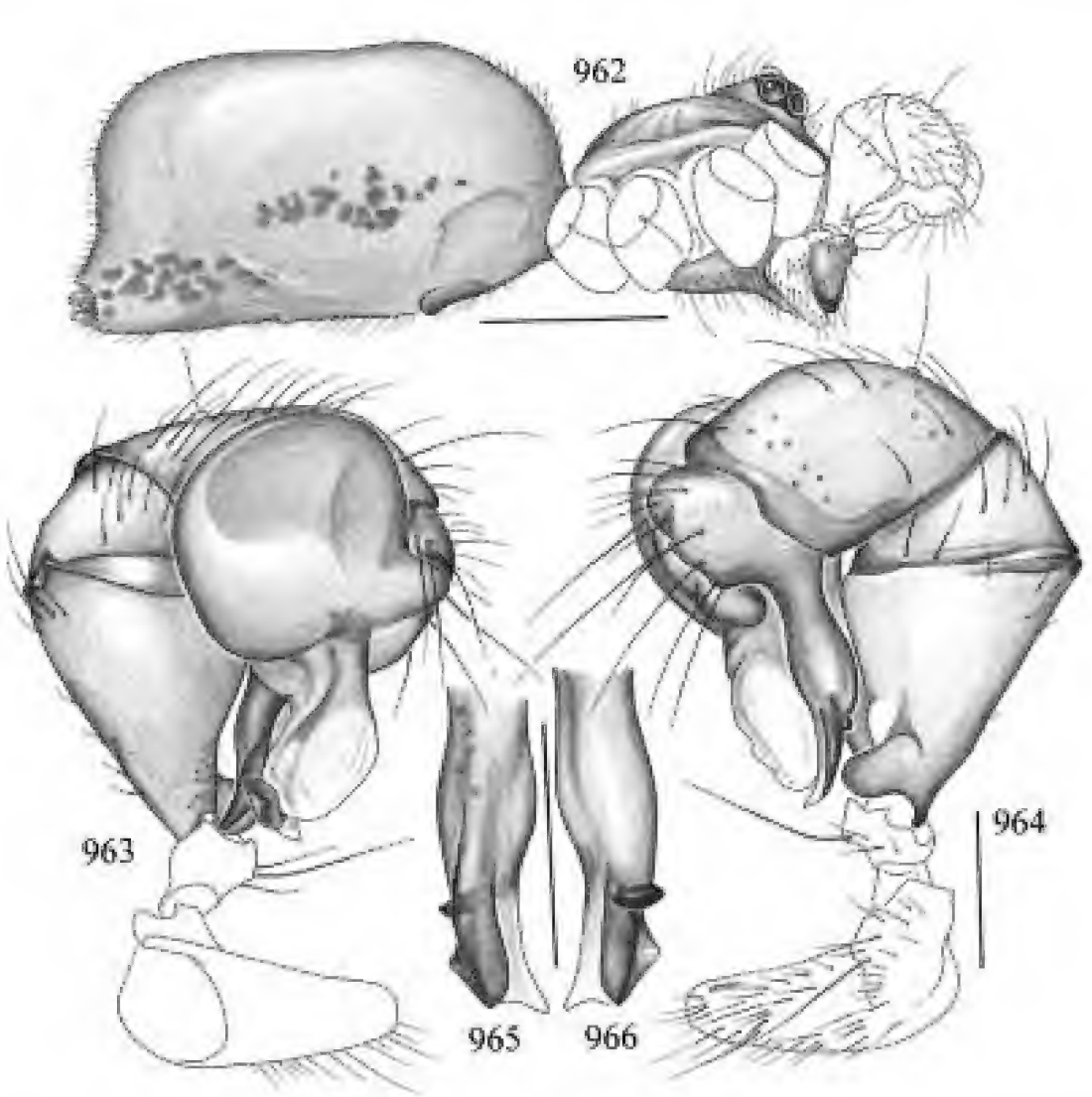
Figures 18, 962–972

TYPES: Male holotype, 1♀ paratype from Cabo Frio Reserve, ~ 80 km N Manaus, Amazonas, Brazil; 1989–1992 (H. G. Fowler), in MCZ.

ETYMOLOGY: Named for the collector of the type material.

DIAGNOSIS: Distinguished from congeners by the small number of modified hairs on the male chelicerae (only ~ 5–10 on each side, figs. 967–969), and their shape (cone-shaped rather than globular: fig. 18).

MALE (holotype): Total length 4.0, carapace width 1.7; leg 1: 50.8 (11.9+0.6 +12.0+23.9+2.4), tibia 2: 7.1, tibia 3: 5.1, tibia 4: 6.3; tibia 1 l/d: 97. Habitus as in fig. 962; carapace orange-brown, slightly darker behind ocular area, black line in thoracic groove; ocular area moderately elevated, ochre-brown, darker on sides (prosoma shape in general very similar to *Coryssocnemis simla*, cf. figs. 982–983); distance PME-ALE about 80% of PME diameter. Sternum rather orange; chelicerae with some modified (cone-shaped: fig. 18) hairs, five in one row on each side, and small distal apophysis (figs. 967–968). Palps as in figs. 963–964, procursus simple (figs. 965–966), bulb with very conspicuous whitish globular area dorsally on embolar division (fig. 970). Tarsal organ exposed. Legs brown, tibiae with light tips,

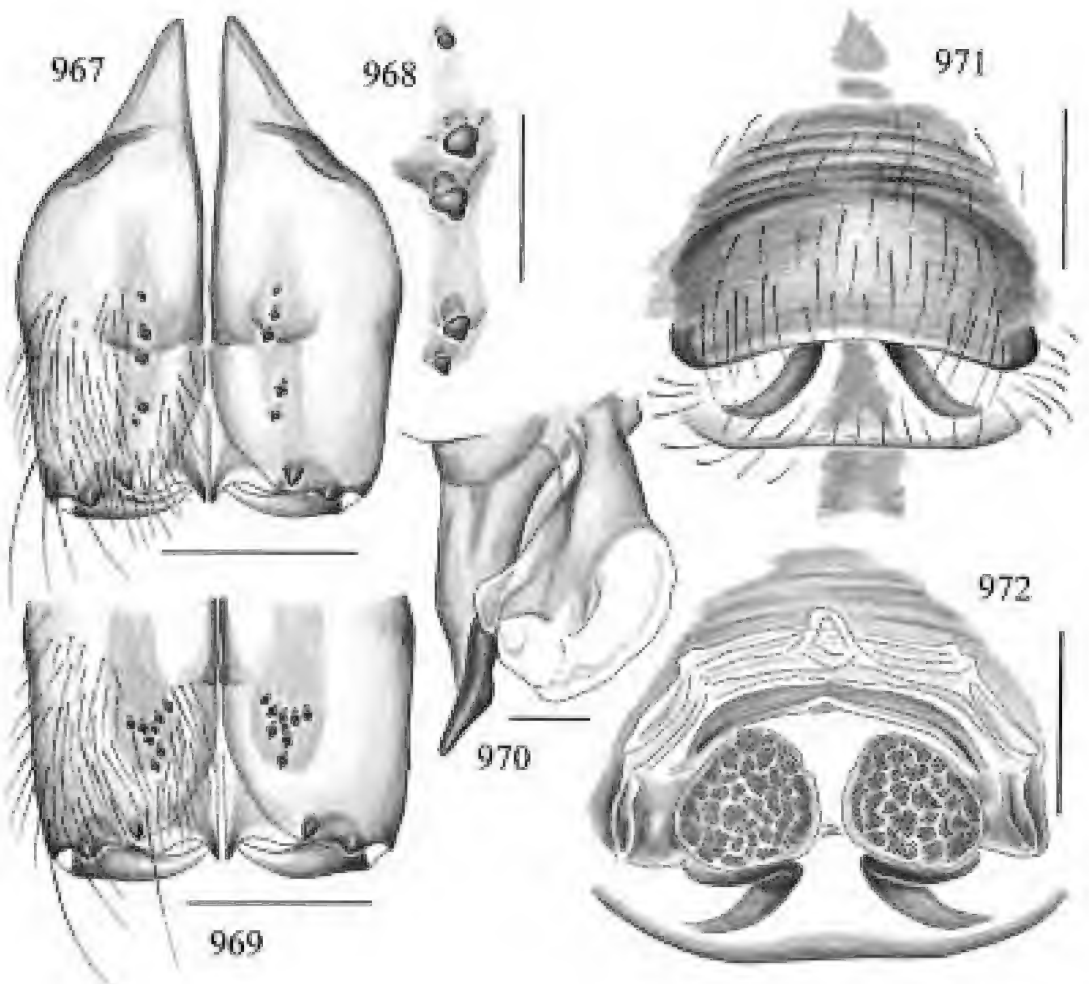


Figs. 962–966. *Carapoia fowleri*, n. sp., male. **962**. Habitus, lateral view. **963**. Left palp, prolateral view. **964**. Left palp, retrolateral view. **965**. Left procursus, ~ prolateral view. **966**. Left procursus, retrolateral (slightly dorsal) view. Scale lines: 1.0 mm (962), 0.3 mm (963–966).

darker rings hardly discernible; without spines and vertical hairs, with curved hairs on tibiae 4 only; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 with ~ 30 pseudosegments. Opisthosoma pale greenish-gray, with darker spots laterally (fig. 962), genital plate oval, orange, lung plates brown; large brown area in front of spinnerets, black line between this area and genital plate; gonopore without epiandrous spigots; ALS with only one piriform gland spigot each.

VARIATION (Manaus Reserves): Tibia 1 in 41 males: 10.3–13.3 ($\bar{x}$ = 11.7). Most males had curved hairs on tibiae 4; some slight variation in number and position of modified hairs on male chelicerae.

FEMALE (Manaus Reserves): Total length (N = 15) 2.9–4.4 ($\bar{x}$ = 3.3); tibia 1 (N = 19) 6.5–8.3 ($\bar{x}$ = 7.3). In general very similar to male; opisthosoma often also with dorsal spots; dark rings on legs often quite distinct: femora (subdistally, followed by light tips) and tibiae (proximally and subdistally, latter followed by light tips); clypeus usually with



Figs. 967–972. *Carapoia fowleri*, n. sp. **967**. Chelicerae of male from Cabo Frio Reserve (Amazonas, Brazil), frontal view. **968**. Modified hairs on male chelicerae (see also fig. 18). **969**. Chelicerae of male from Caxiunã, (Pará, Brazil), frontal view. **970**. Embolar division of left bulb, prolateral view. **971**. Epigynum, ventral view. **972**. Epigynum, dorsal view. Scale lines: 0.3 mm (967, 969, 971–972), 0.1 mm (968, 970).

horseshoe-shaped brown mark. Epigynum flat brown plate, with characteristic pair of sclerites diverging behind epigynum (fig. 971); internally with pair of large roundish pore plates (fig. 972). Several females had a plug in their genitalia; plug always clearly divided into two distinct halves (right and left).

DISTRIBUTION: Known from the Manaus area (Amazonas, Brazil) and maybe from Pará (Brazil) and Guyana (see Notes below) (map 7).

MATERIAL EXAMINED: BRAZIL: *Amazonas*: Cabo Frio Reserve: types above; and 19♂ 3♀ from same locality, 1989–1992 (H. G. Fowler, E. N. Vincticinque, C. Vieira), in MCZ; Colosso Reserve, Dimona Reserve, "km 41": 63♂ 23♀ same dates and collectors, in MCZ; Reserva Ducke, Feb. 20, 1992 (A. A. Lise), 4♂ in MCP (1683 part). *Pará*: Caxiunã, Melgaço, Aug. 11, 1996 (A. A. Lise "et al."), 8♂ 14♀ in MCP (9424, 9427, 9429, 9430), tentatively assigned (see Notes below). The following four vials contain specimens collected by F. O. Pickard-Cambridge, deposited in the BMNH, which are

technically paratypes of *Blechroscelis cambridgei* Mello-Leitão: Santarém Forest: 3♂ 2♀; Breves: 4♂ 2♀; "Santarém Forest, Lower Amazonas": 2♂; "Pará, Lower Amazonas": 1♂; all assigned tentatively (see Notes below). GUYANA: Isherton ("Ishestun"), 10 mi E Rupununi River, Nov. 1937 (W. G. Hassler), 1♀ in MZF, tentatively assigned (see Notes below).

NOTES: The specimens from Pará are assigned tentatively because the pattern of modified hairs on the male chelicerae differs: those from Caxiunã have hairs only in one distal patch (fig. 969), those collected by F. O. Pickard-Cambridge have more hairs proximally (~ 5). Also, some male specimens have curved hairs both on male tibiae 1 and 4, and on femora, and in some females the carapace has a distinct brown margin and brown bands medially and around the ocular area. Palps and epigyna are apparently indistinguishable from the type material. Tibia 1 in 4 males (Caxiunã): 10.3–10.7; in 12 females: 6.8–8.0 ($\bar{x}$ = 7.5).

The single female specimen from Guyana is assigned tentatively, as females in this genus are not easily distinguished.

Carapoia genitalis (Moenkhaus, 1898), new combination

Figures 973–979

Litoporus genitalis Moenkhaus, 1898: 107–110, figs. 5, 5a–d. – Mello-Leitão, 1918: 96–97 (copy of Moenkhaus's original description).

TYPES: Male lectotype (designated herein, in E2842e3031), 2♂ 2♀ paralectotypes, all in poor condition, from Poço Grande, São Paulo, Brazil; Feb. 1898 (W. J. Moenkhaus?), in MZSP (E2841e3022; E2852e3035; E2842e3031), examined.

DIAGNOSIS: Easily distinguished from congeners by the procursus, which is provided with a large, semitransparent dorsal projection (figs. 975–976).

MALE (lectotype): Total length ~ 2.5 (in bad shape; Moenkhaus's measurement was 3.5), carapace width ~ 1.0; leg 1: (8.3+0.5+8.1; metatarsus and tarsus missing), tibia 2: 4.9, tibia 3: 3.2, tibia 4: 4.3; tibia 1 l/d: 76 (tibia 1 in one paralectotype: 8.3; Moenkhaus's measured male had 8.75). Habitus and prosoma apparently very similar to *C. fowleri* (cf. fig. 962); prosoma and legs completely bleached (yellowish). Chelicerae with ~ 25 modified hairs on each side, and single modified hair more distally (figs. 973–974). Palps in general as in *C. fowleri* (cf. figs. 963–964), but femur even more widened distally, procursus ending in sclerotized tip with subterminal small apophysis, provided dorsally with large projection that is brown and narrow at basis, semitransparent and wide distally (figs. 975–976); bulb with curved apophysis (fig. 977). Femora 3 significantly thicker than others; almost all hairs on legs missing. Opisthosoma apparently more pointed posteriorly than in *C. fowleri*, dark ochre-gray, with blackish spots in lateral and dorsal lines.

FEMALE (paralectotypes): Very similar to male; tibia 1 in 2 females: 5.2, 5.5. Epigynum flat, ventral view as in fig. 978, light brown with large orange area in front; dorsal view as in fig. 979.

DISTRIBUTION: Known only from type locality (map 7).

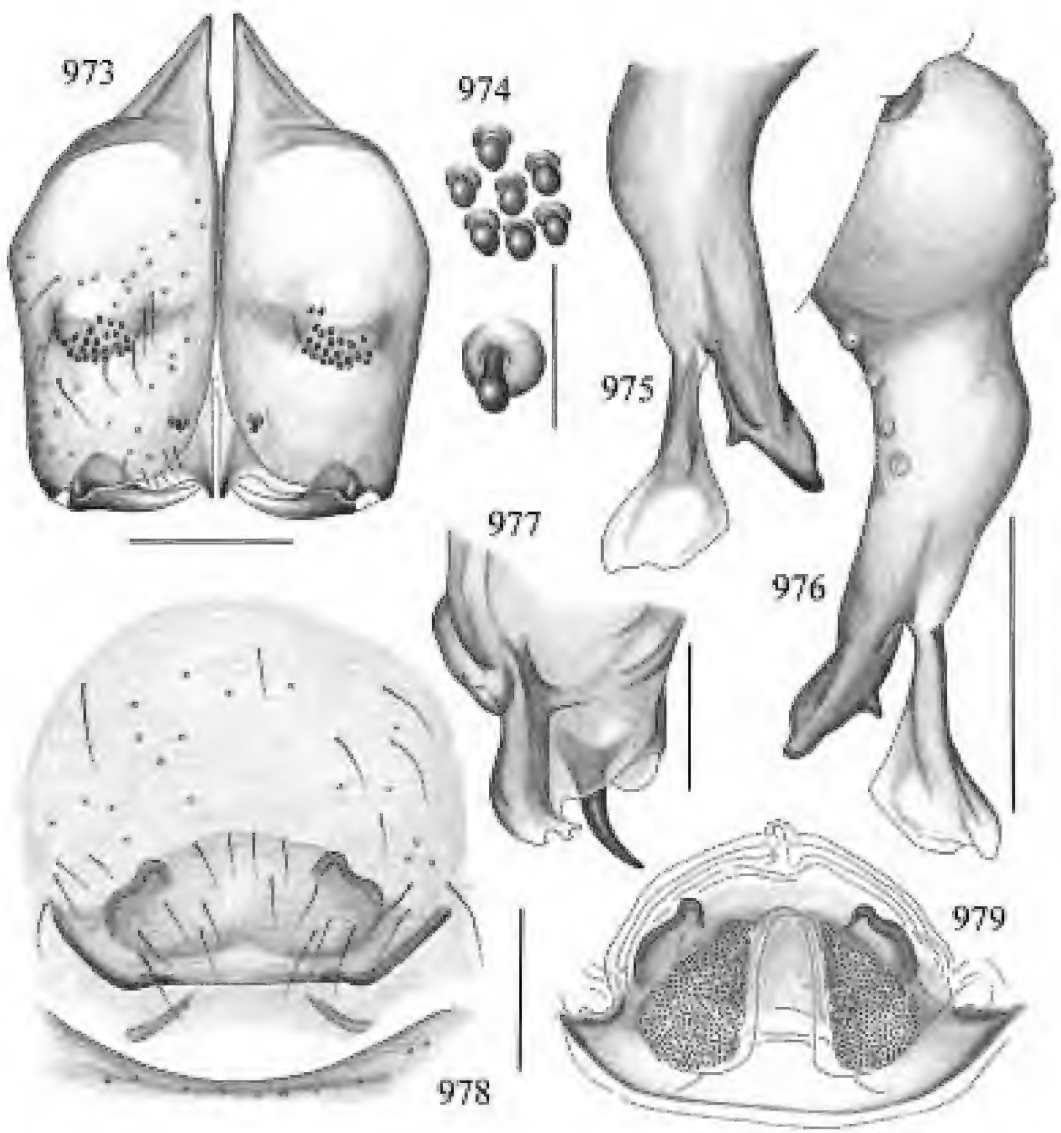
MATERIAL EXAMINED: BRAZIL: *São Paulo*: Poço Grande: types above.

CORYSSOCNEMIS SIMON, 1893

Coryssocnemis Simon, 1893b: 483 (type species by original designation *Coryssocnemis callaica* Simon, 1893; examined). – Gertsch, 1971: 56. – Gertsch and Peck, 1992: 1186.

DIAGNOSIS: Medium-sized (total length ~ 2–5 mm), dark-colored, eight-eyed pholcids, with elongate opisthosoma, known only from Venezuela and Trinidad. Distinguished from other New World genera by the simple procursus with dorsodistal black spine (figs. 988, 1000, 1004, 1006), the chelicerae with short, pointed apophyses (figs. 987, 997, 1005; missing in *C. monagas*, n. sp.), and a pair of distal apophyses on the male chelicerae that are bent back upwards (figs. 35, 987: arrow, 997; missing in *C. aripo*, n. sp.).

DESCRIPTION: Total length ~ 2–5 mm. Carapace with distinct thoracic groove, ocular area moderately elevated, with eight eyes, AME considerably smaller than others. Distance PME-ALE usually large (~ 70–90% of PME diameter; in *C. monagas* only 45%). Male clypeus unmodified. Sternum wide (fig. 986). Male chelicerae usually with typical pointed



Figs. 973–979. *Carapoia genitalis* (Moenkhaus). **973**. Male chelicerae, frontal view. **974**. Modified hairs on male chelicerae. **975**. Right procursus, prolateral view. **976**. Right procursus, retrolateral view. **977**. Embolar division of right bulb, ~ prolateral view. **978**. Epigynum, ventral view. **979**. Epigynum, dorsal view. Scale lines: 0.2 mm (973, 975–979), 0.05 mm (974).

cone-shaped apophyses (e.g., figs. 987, 997), sometimes with additional pair of longer apophyses and pair of apophyses (close to laminae) that are bent upward (figs. 35, 987: arrow, 997); without stridulatory ridges. Male palps small in relation to overall size; coxa with retrolateral apophysis; femur with blunt, downward-projecting, ventrodistal apophysis (e.g., figs. 989, 1007); procursus simple, with dorsodistal black spine (e.g., figs. 988, 1000); bulb with varying pattern of apophyses and membranous structures distally. Tarsal organ exposed (examined: *C. simla*, n. sp.). Legs long (leg 1 about 8–16 × body length; tibia 1 l/d about 65–80), leg 1 always longest, leg 2 slightly longer than leg 4, leg 3 shortest; femur 2 sometimes thicker than others; sometimes with darker rings on femora (subdistally, fol-

lowed by light tip) and tibiae (proximally, subdistally followed by light tip); sometimes with spines ventrally on anterior femora (femora 1–2, or 1–3), without vertical and curved hairs; retrolateral trichobothrium of tibia 1 very proximal (at 2–4%); tarsus with ~ 20 to more than 30 pseudosegments, which are distinct distally but difficult to count proximally. Opisthosoma elongate with terminal spinnerets (fig. 980), dorsally with dark spots. Male gonopore without epiandrous spigots (examined: *C. simla*). ALS with only one piriform gland spigot each (examined: *C. simla*), other spinnerets typical for family.

Sexual dimorphism slight, females with shorter legs, unmodified chelicerae, with greater variation in opisthosoma size. Epigynum simple dark sclerotized plate or moderately sculptured; internally with pair of small, roundish dorsal pore plates.

MONOPHYLY: The species included share the shape of the procursus (simple rod with dorsal spine distally). All species except *C. aripo* share the upward-bent apophysis on the male chelicerae near the cheliceral lamina.

GENERIC RELATIONSHIPS: The genus shares with some other Venezuelan genera (*Mecoloesthus*, *Systenita*, *Kaliana*) the shape of the ventrodistal femur apophysis. Some *Mecoloesthus* species and *Kaliana yuruani*, n. sp., have a distal structure on the chelicerae that might be a homolog to the upward-bent apophysis in *Coryssocnemis* (see figs. 1018, 1092). The cladogram in appendix 2 proposes *Coryssocnemis* as sister group of *Mesabolivar* based on the presence of enlarged femora in walking legs. However, this character has considerable homoplasy (see char. 23 in Characters Scored).

MISPLACED SPECIES: Of the 22 species previously assigned to *Coryssocnemis*, all but the type species are herein either transferred to other genera, or considered incertae sedis: most Central American species are transferred to *Ixchela* (incertae sedis are: *"C." clara*, *faceta*, *iviei*, *tigra*, *viridescens*; see appendix 3), Galápagos species to *Aymaria*; *C. altiventer* to *Tupigea*; *C. togata*, *banksi* and *paraensis* to *Mesabolivar*; *C. uncata* to *Litoporus*; see respective genera for discussion of transfers. "*C.*" *discolor*, *lepidoptera*, and *occulta* cannot be placed (inadequate descriptions; types possibly lost; see appendix 3).

NATURAL HISTORY: Some information on the labels (see species descriptions) suggests that the spiders live in webs close to the ground, in shady humid areas.

DISTRIBUTION: Known only from northern Venezuela and Trinidad.

COMPOSITION: The genus as redelimited herein includes only the type species *C. callaica* (see redescription in Huber, 1997b) and the four species newly described below. Eight further species formally remain in the genus, but will have to be removed eventually (see Misplaced Species above).

Coryssocnemis simla, new species

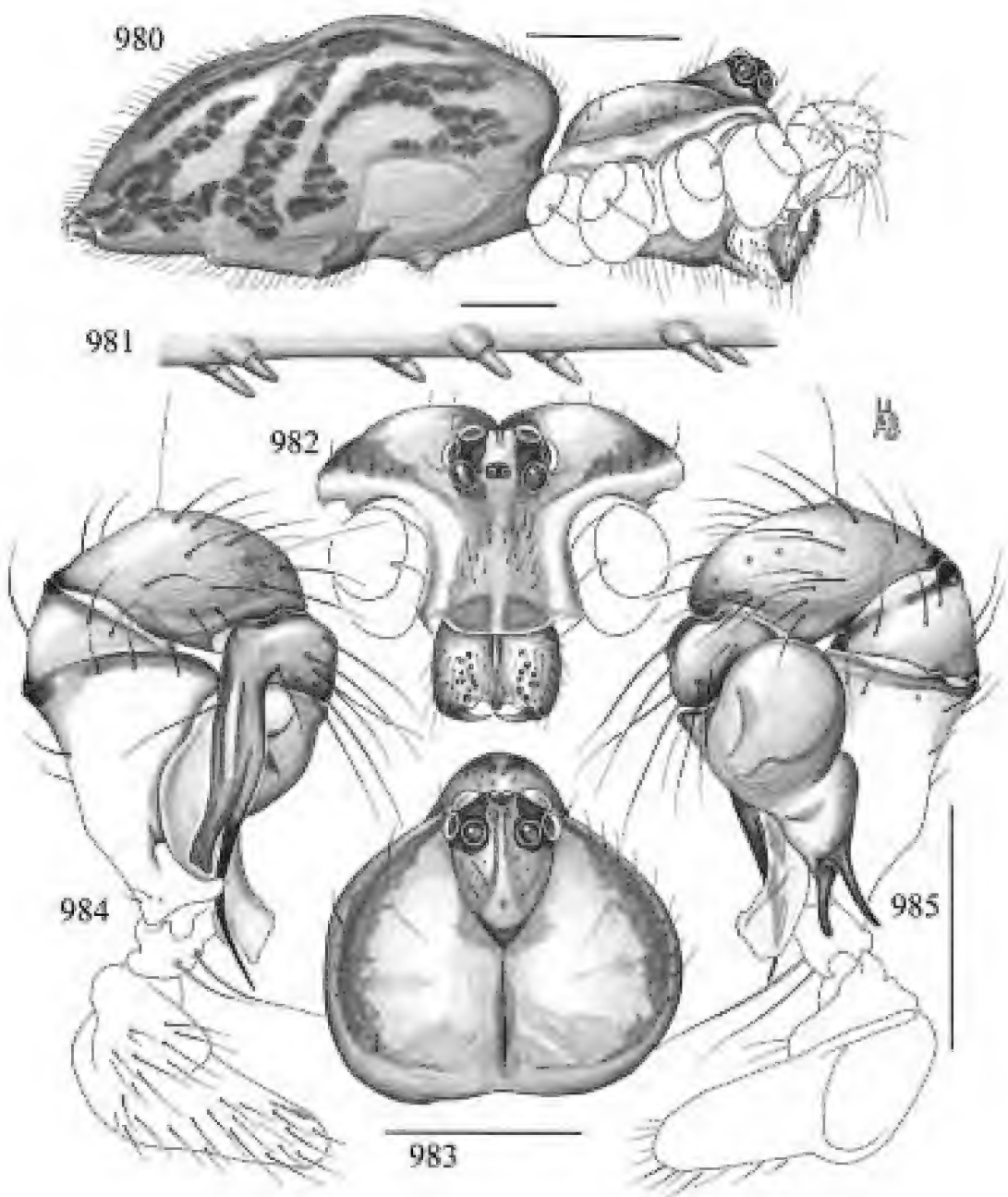
Figures 35, 110, 980–992

TYPES: Male holotype, 5♂ 4♀ paratypes, and 6 juveniles, from Simla, Arima Valley, Trinidad; Apr. 19, 1964 (A. M. Chickering), in AMNH.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

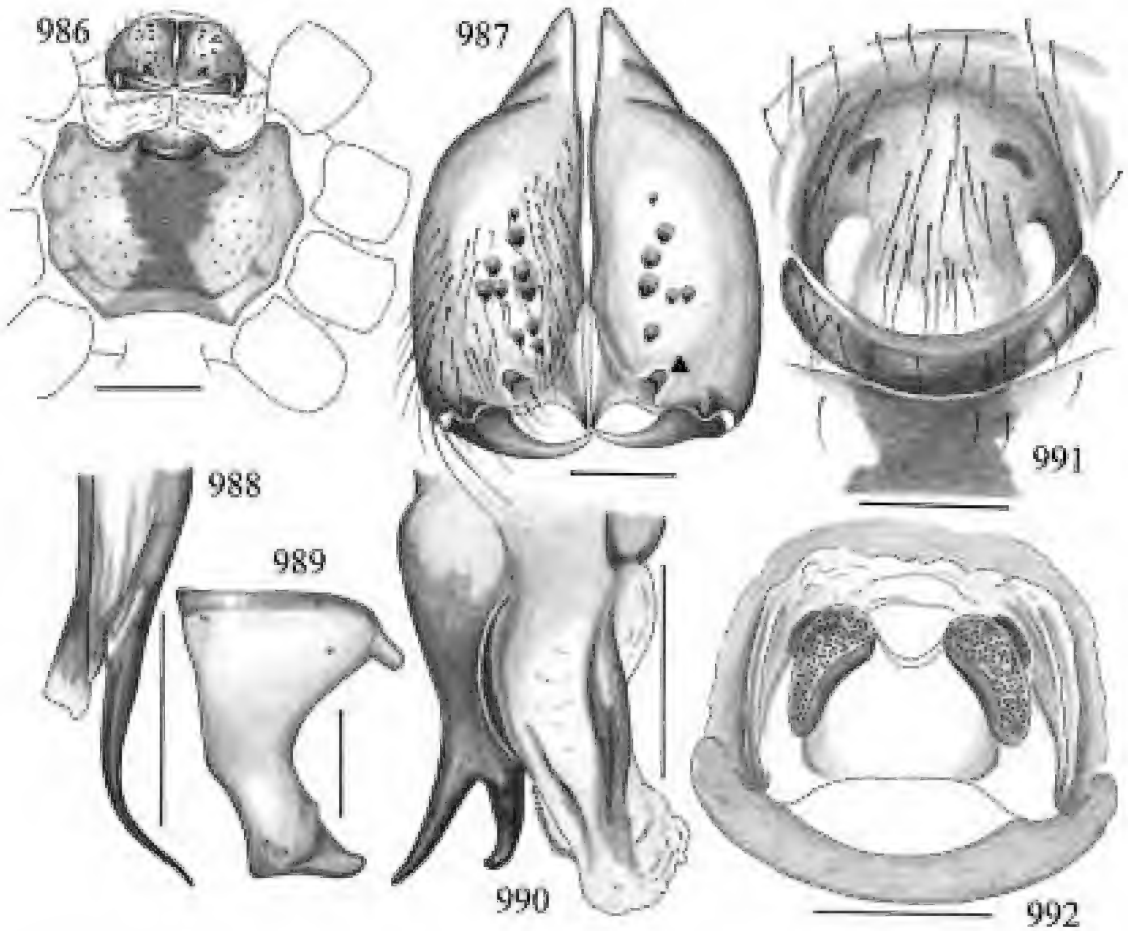
DIAGNOSIS: Distinguished from congeners by the position and number of sclerotized cones frontally on the male chelicerae (fig. 987; in *C. callaica* they form a pair of arches; see Huber, 1997b), and by the two slender bulbal apophyses (fig. 990; in *C. callaica* they are much shorter; see Huber, 1997b); from *C. callaica* and *C. guatopo* also by the flat epigynum (fig. 991; in *C. callaica* the epigynum has a pair of distinctive frontal protrusions: fig. 993; in *C. guatopo* the epigynum has a median indentation: fig. 995).

MALE (holotype): Total length 4.4, carapace width 1.6; leg 1: 37.7 (8.8+0.7 +9.1+16.8+2.3), tibia 2: 5.7, tibia 3: 4.7, tibia 4: 5.2; tibia 1 l/d: 68. Habitus as in fig. 980; carapace ochre to light brown, with dark brown pattern (fig. 983), ocular area brown with light median band; distance PME-ALE about 80% of PME diameter. Clypeus brown (fig. 982), sternum ochre with dark brown median band (fig. 986); chelicerae brown with several cone-shaped, sclerotized apophyses, and pair of upward-bent apophyses distally (figs. 35, 987: arrow). Palps as in figs. 984–985, coxa with rounded but distinct retrolateral apophysis, femur with conspicuous retrolateral apophysis proximally, ventral



Figs. 980–985. *Coryssocnemis simla*, n. sp., male. **980**. Habitus, lateral view. **981**. Ventral side of femur 1 at ~ 1/3 of length, with two rows of spines. **982–983**. Prosoma, frontal and dorsal views. **984**. Right palp, retrolateral view. **985**. Right palp, prolateral view. Scale lines: 1.0 mm (980, 982, 983), 0.5 mm (984–985), 0.1 mm (981).

apophysis distally (fig. 989), procursus with membranous lamella ventrally, long spine dorsally (fig. 988), bulb with pair of apophyses and accompanying transparent protrusion (fig. 990). Legs brown, femora and tibiae with light tips; femora 2 thicker than others; femora 1 and 2 with two rows of spines ventrally (fig. 981); legs without curved and



Figs. 986–992. *Coryssocnemis simla*, n. sp. **986**. Male prosoma, ventral view. **987**. Male chelicerae, frontal view (arrow points to upward-bent apophysis, cf. fig. 35). **988**. Right procursus tip, retrolateral view. **989**. Male right palpal femur, retrolateral view. **990**. Embolar division of right bulb, prolateral view. **991**. Epigynum, ventral view. **992**. Epigynum, dorsal view. Scale lines: 0.5 mm (986), 0.2 mm (987–992).

vertical hairs; retrolateral trichobothrium of tibia 1 at 2%; tarsus 1 with over 30 pseudosegments. Opisthosoma greenish-gray, with darker greenish spots arranged in stripes (fig. 980); genital plate dark brown, black band behind genital plate halfway to spinnerets.

VARIATION: Tibia 1 in 10 males (type locality): 8.7–10.9 ($\bar{x}$ = 9.7).

FEMALE (type locality): Total length (N = 10) 2.4–3.3; tibia 1 (N = 10) 5.5–6.4 ($\bar{x}$ = 5.9). In general very similar to male but femora without spines. Epigynum brown to dark brown, simple flat plate (fig. 991), dorsal view as in fig. 992, pore plates oval.

DISTRIBUTION: Known from several localities on Trinidad.

MATERIAL EXAMINED: TRINIDAD: *St. George Co.*: Arima Valley, Simla, Apr. 16–28, 1964 (10 vials) (A. M. Chickering), 37♂ 38♀ many juveniles in AMNH; same locality, Feb. 8, 1965, and Feb. 24, 1966 (2 vials) (J. Rozen), 4♂ 4♀ 1 juvenile in AMNH; 4 mi N Arima, Apr. 18–May 4, 1967 (C. T. Collins), 2♀ in AMNH; Arima, Asa Wright Nat. Cent., "at night ex small excavation in embankment roadside, in web," July 12, 1979 (L. N. Sorkin & B. Faber), 1♂ in AMNH; Arima, Simla Research Station, Feb. 4, 1984 (J. Coddington), 1♂ 1♀ in USNM;

Arima, Spring Hill (AWNC), "web, roadside mud embankment with depression," July 22, 1979 (L. N. Sorkin), 1♂ 1♀ in AMNH; Arima, Andrews Trace (off Blanchisseuse Rd), "leaf litter, web," July 16, 1979 (L. N. Sorkin), 1♂ 2♀ in AMNH; Arima, Guanapo Valley Rd, Guanapo Cave, cave wall, July 15, 1979 (L. N. Sorkin), 1♂ in AMNH; Arima Valley, 800–1200 ft elev., Feb. 10–22, 1964 (2 vials) (J. Rozen & P. Wygodzinski), 5♂ 5♀ in AMNH; Blanchisseuse, beach area, Apr. 22, 1964 (A. M. Chickering), 2♂ 2♀ in AMNH; *St. Patrick Co.:* navy base, Sept. 1944, Apr. 1945 (2 vials) (R. Ingle), 1♂ 3♀ some juveniles, in AMNH.

Coryssocnemis guatopo, new species

Figures 995–1000

TYPE: Male holotype from 28 km N Altagracia, Guatopo Nat. Park, Dept. Miranda, Venezuela; 700 m elev., "El Lucero, ravine," May 31–June 7, 1987 (S. & J. Peck), in AMNH.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Closely related to *C. callaica*; easily distinguished by the epigynum (compare figs. 993–996). Distinguished from other congeners by the sclerotized cones frontally on the male chelicerae in arches and the additional pair of pointed apophyses closer to the median line (fig. 997), and by the short apophyses on the bulb (figs. 998–999).

MALE (holotype): Total length 2.2, carapace width 1.0; leg 1 missing, tibia 2: 3.7, tibia 3: 2.7, tibia 4: 3.5. Habitus and prosoma shape as in *C. simla* (cf. figs. 980, 982–983); carapace brown, darker medially, ocular area dark brown; distance PME-ALE about 70% of PME diameter. Sternum ochre, darker anteriorly; chelicerae ochre and brown, with several cone-shaped sclerotized apophyses in lateral arches, pair of pointed apophyses medially, and pair of rounded, upward-facing apophyses distally (fig. 997). Palps in general as in *C. simla* (cf. figs. 984–985), procursus as in fig. 1000, bulb with several short apophyses and semitransparent projection (figs. 998–999). Legs light brown, femora with subdistal dark rings and light tips, tibiae with faint proximal and more distinct subdistal dark rings, and light tips; femora 2 not thicker than others; legs without spines, without curved and vertical hairs. Opisthosoma greenish-gray, dorsally covered with dark spots; genital plate wide, dark brown; black band behind genital plate halfway to spinnerets.

VARIATION: Three of the other four males examined had spines in two rows ventrally on femora 2. In two of these males, femora 2 were slightly thicker than the others. The fourth male lacked spines on both femora 1 and 2. Measurements of two other males: tibia 1: 8.8, 9.6; tibia 2: 5.6, 6.0; retrolateral trichobothrium on tibia 1 at 3.4%; tarsus 1 with ~ 30 pseudosegments (difficult to count).

FEMALE: Similar to male, but legs much thinner and shorter (tibia 1 in 2 females: 5.7, 6.4), without spines. Epigynum dark brown plate with shallow anterior indentation (fig. 995); internal genitalia with small pore plates (fig. 996).

DISTRIBUTION: Known only from Guatopo Nat. Park, Miranda, Venezuela.

MATERIAL EXAMINED: VENEZUELA: *Miranda*: Guatopo Nat. Park: type above; Guatopo Nat. Park, Agua Blanca, 400 m elev., forest streamside, June 7–14, 1987 (S. & J. Peck), 1♂ in AMNH; same locality, ravine, May 31–June 7, 1987 (S. & J. Peck), 1♂ in AMNH; Guatopo Nat. Park, Santa Cruzita, 450 m elev., Feb. 14, 1984 (J. Coddington), 2♂ 2♀ (2 vials) in USNM.

Coryssocnemis monagas, new species

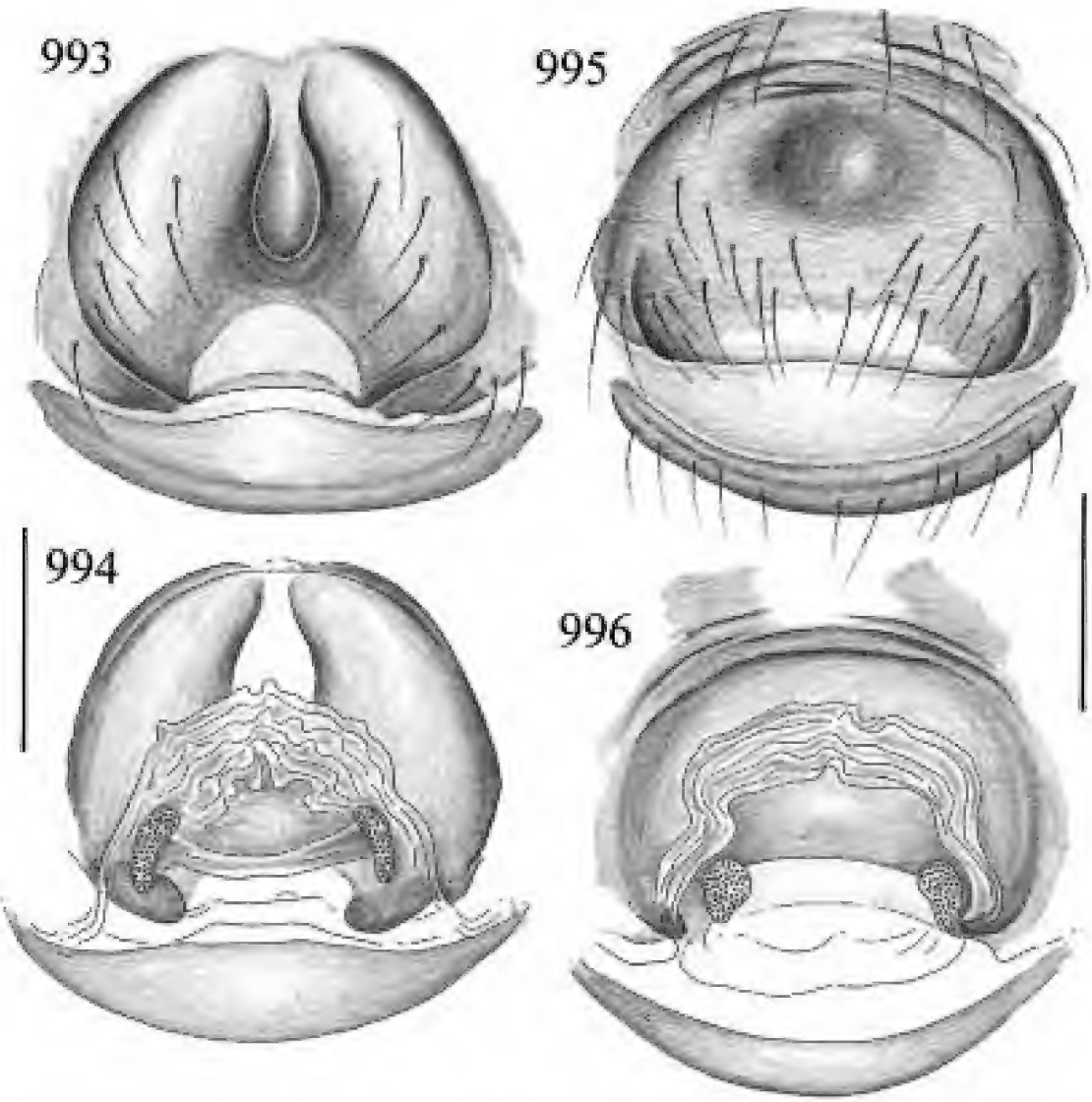
Figures 1001–1004

TYPE: Male holotype from 27 km SW Caripe, Monagas, Venezuela; 300 m elev., "forest over coffee," July 19–31, 1987 (S. & J. Peck), in AMNH.

ETYMOLOGY: Named for the Venezuelan state Monagas. The specific name is a noun in apposition.

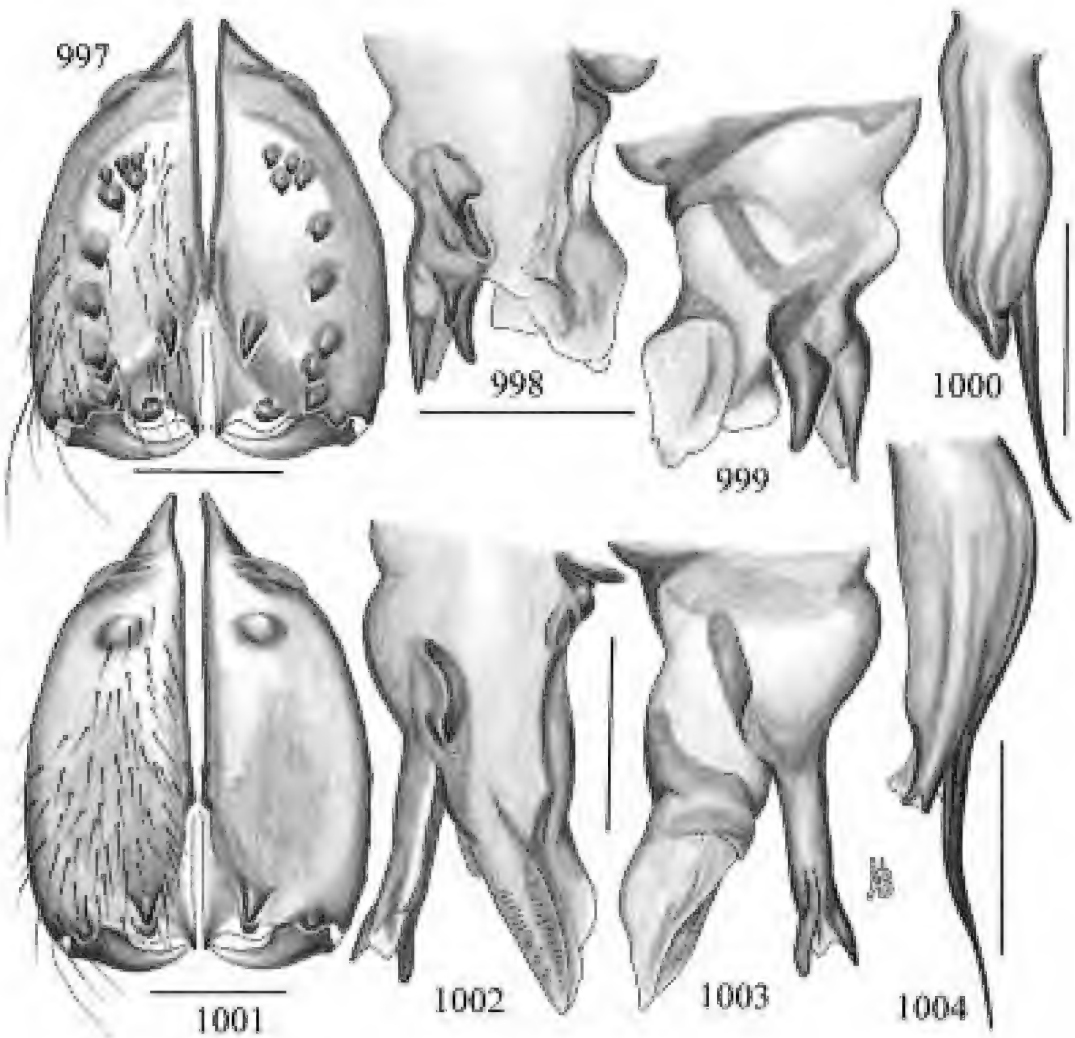
DIAGNOSIS: Distinguished from congeners by the shape of the bulbal apophyses (figs. 1002–1003), and the armature of the male chelicerae, which are equipped with proximal humps and two pairs of distal apophyses, but lack sclerotized cones (fig. 1001).

MALE (holotype): Carapace width 1.3, opisthosoma missing; leg1: 26.8 (6.3+0.5+6.5



Figs. 993–996. *Coryssocnemis* spp. 993–994. *C. callaica* Simon, female paralectotype. **993**. Epigynum, ventral view. **994**. Epigynum, dorsal view. 995–996. *C. guatopo*, n. sp. **995**. Epigynum, ventral view. **996**. Epigynum, dorsal view. Scale lines: 0.2 mm.

+11.5+2.0), tibia 2: 4.0, tibia 3: 3.2, tibia 4: 3.9; tibia 1 l/d: 65. Habitus and prosoma shape as in *C. simla* (cf. figs. 980, 982–983); entire prosoma light brown, only ocular area slightly darker; distance PME-ALE only ~ 45% of PME diameter. Chelicerae light brown, with blackish proximal hump, and two pairs of distal apophyses, one rather pointed, one round (fig. 1001). Palps in general as in *C. simla* (cf. figs. 984–985), procursus as in fig. 1004, embolar division with characteristic projections, one bifurcated and rather sclerotized, the other rather membranous (figs. 1002–1003). Legs light brown, femora with subdistal dark rings and light tips, tibiae with light tips; femora 2 not significantly thicker than others; femora 1–3 with spines ventrally (cf. fig. 981), on femora 3 spines almost look like "normal" hairs; all legs without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 4%; tarsus 1 with over 20 pseudosegments.



Figs. 997–1004. *Coryssocnemis* spp. 997–1000. *C. guatopo*, n. sp., male. **997**. Chelicerae, frontal view. **998–999**. Embolar division of right bulb, retrolateral (998) and prolateral (999) views. **1000**. Right procursus, retrolateral view. 1001–1004. *C. monagas*, n. sp., male. **1001**. Chelicerae, frontal view. **1002–1003**. Embolar division of right bulb, retrolateral (1002) and prolateral (1003) views. **1004**. Right procursus, retrolateral view. Scale lines: 0.2 mm.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: VENEZUELA: *Monagas*: 27 km SW Caripe: type above.

Coryssocnemis aripo, new species

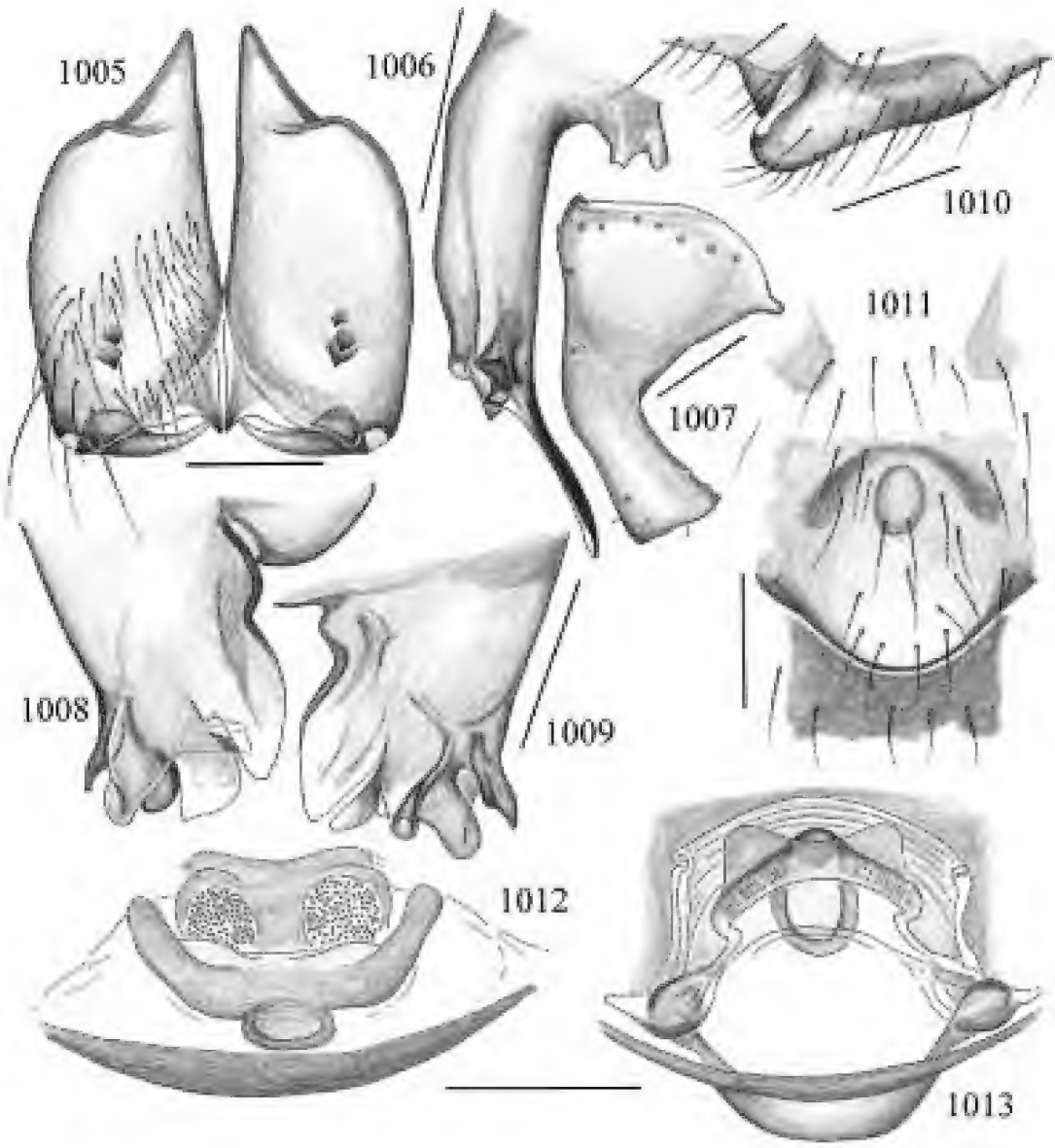
Figures 1005–1013

TYPES: Male holotype, 2♀ paratypes from El Cerro del Aripo (Mt. Aripo), "Cave No.1," Trinidad; 2200 ft elev., no date (P.C.J. Brunet), in AMNH.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from congeners by the 2–3 sclerotized cones frontally on each male chelicera (fig. 1005), by the absence of upward-bent apophyses on the male chelicerae, and by the shape of the bulbal apophyses (figs. 1008–1009).

MALE (holotype): Total length 2.6, cara-



Figs. 1005–1013. *Coryssocnemis aripo*, n. sp., male holotype and female paratype. **1005**. Male chelicerae, frontal view. **1006**. Right procursus, retrolateral view. **1007**. Male right palpal femur, retrolateral view. **1008–1009**. Embolar division of right bulb, retrolateral (1008) and prolateral (1009) views. **1010–1011**. Epigynum, lateral and ventral views. **1012**. Epigynum, dorsoposterior view. **1013**. Epigynum, dorsal view. Scale lines: 0.2 mm.

pace width 1.3; leg 1: 40.3 (9.2+0.5+9.3 +17.7+3.6), tibia 2: 6.0, tibia 3: 4.7, tibia 4: 5.9; tibia 1 l/d: 78. Habitus and prosoma shape as in *C. simla* (cf. figs. 980, 982–983); carapace pale ochre with dark median stripe, ocular area slightly darker; distance PME-ALE about 90% of PME diameter. Sternum pale ochre-yellow; chelicerae light ochre-brown, with blackish cones frontally (fig. 1005). Palps in general as in *C. simla* (cf. figs. 984–985), femur as in fig. 1007, procursus and bulb as in figs. 1006, 1008–1009. Legs monochromous pale ochre-yellow; without spines, without curved and vertical

hairs; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 with over 30 pseudosegments. Opisthosoma greenish, with dark spots as in *C. simla* (cf. fig. 980).

FEMALE (paratypes): Tibia 1: 6.9, 7.6. In general very similar to male, but darker. Epigynum flat, brown to dark brown, with blackish spot behind epigynum and pair of brown spots in front of epigynum (figs. 1010–1011); dorsal view as in fig. 1013, dorsoposterior view as in fig. 1012.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: TRINIDAD: El Cerro del Aripo: types above.

MECOLOESTHUS SIMON, 1893

Mecoloesthus Simon, 1893b: 482 (type species by original designation *M. longissimus* Simon, 1893; examined). – Bonnet, 1957: 2742 (justification of preference of *Mecoloesthus* over *Mecolaesthus*).

DIAGNOSIS: Medium-sized to large (total length ~ 2–7 mm), eight-eyed pholcids; distinguished from other New World genera by the posteriorly inflated prosoma.

DESCRIPTION: Total length usually ~ 2–4 mm, only *M. longissimus*, with its long opisthosoma, up to 7 mm. Carapace with thoracic groove, which disappears posteriorly because of inflation of carapace (e.g., figs. 1025–1026); ocular area moderately elevated; eight eyes; AME smallest. Distance PME-ALE usually large (~ 80–90% of PME diameter; smaller in some species assigned tentatively: *M. yawaperi*, n. sp.; *hoti*, n. sp.; *arima*, n. sp.). Male clypeus unmodified. Male chelicerae with one or more pairs of variously shaped apophyses, without stridulatory ridges. Male palps relatively small in relation to overall size; coxa with retrolateral apophysis, femur with retrolateral apophysis proximally, with variably shaped ventral apophysis distally, procursus and bulb variable. Tarsal organ exposed (examined: *M. longissimus*: fig. 79). Legs of varying length (leg 1 usually 6–12 × body length; tibia 1 l/d: 35–114); leg 1 always longest, legs 2 and 4 about same length, leg 3 shortest; without spines, without curved and vertical hairs (two species assigned tentatively have many vertical hairs on metatarsi: *M. yawaperi*, *hoti*); retrolateral trichobothrium of tibia 1 very proximal (1.5–6%); tarsus with ~ 25 to > 35 pseudosegments. Opisthosoma longer than high, pointed at spinnerets, in type species unusually long. Male gonopore without spigots (examined: *M. longissimus*: fig. 136). ALS with only one piriform gland spigot each (examined: *M. longissimus*: fig. 180), other spinnerets typical for family.

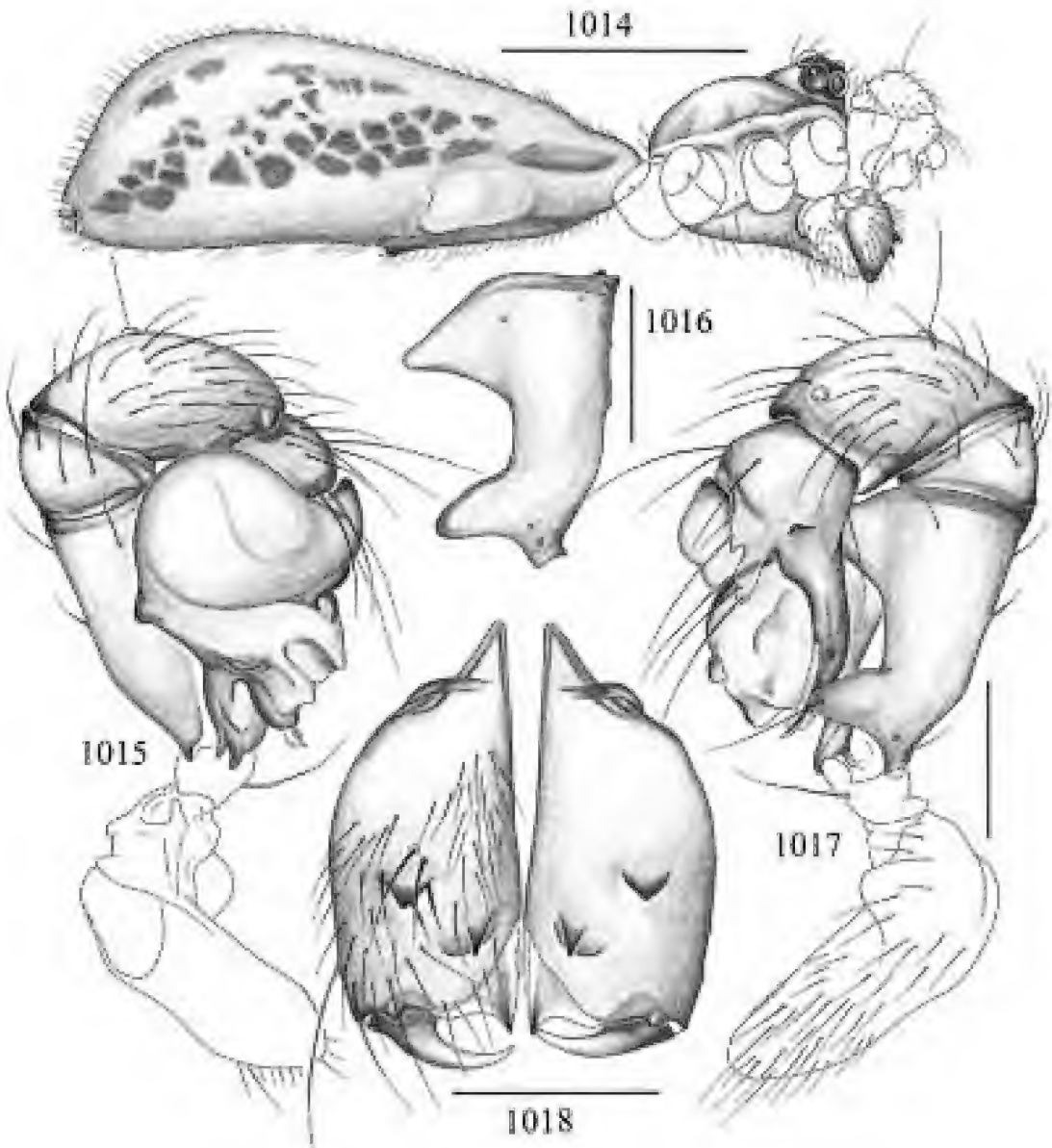
Sexual dimorphism slight (females of most species unknown); in *M. longissimus* females with opisthosoma shorter than in males.

MONOPHYLY: The species included share the posteriorly inflated prosoma. In some species, including the type species, this inflation is very slight, but in other close relatives the inflation is very distinct (e.g., *M. mucuy*, n. sp.: figs. 1024–1026; *azulita*, n. sp.; *peckorum*, n. sp.).

GENERIC RELATIONSHIPS: Two characters vaguely hint to a closer relationship with *Coryssocnemis*: the blunt apophysis close to the lamina on the male chelicera (present only in *M. longissimus*), which might be a homolog to the upward-bent apophysis in *Coryssocnemis* (*C. monagas* has the same blunt apophysis instead of the "typical" upward-bent apophysis: fig. 1001); and the distal apophysis on the male palpal femur. (This character may also unite *Mecoloesthus* with further mainly Venezuelan genera: *Systenita*, *Kaliana*).

SPECIFIC RELATIONSHIPS: A number of species (core-group) seem close to *M. longissimus* (similar procursi and bulbs), but have shorter opisthosomata and shorter legs: *M. mucuy*, *azulita*, *peckorum*, *tabay*, n. sp., *cornutus*, n. sp. All other species are assigned tentatively: (1) three closely related species from the Antilles: *M. lemniscatus* (Simon, 1894), n. comb., and *M. nigrifrons* (Simon, 1894), n. comb. (both transferred from *Psilochorus*), and the newly described *M. taino*, n. sp.; these form a monophyletic group, sharing details of the procursus, especially a unique internal "reservoir" (arrow in fig. 1085); (2) four newly described long-legged species that show substantial variation in genital structure, but share the inflated carapace: *M. yawaperi*, *putumayo*, *arima*, *hoti*.

DISTRIBUTION: The core-group is so far restricted to northern Venezuela. Together with the species assigned tentatively, the genus



Figs. 1014–1018. *Mecoloesthus longissimus* Simon, male from Guatopo National Park. **1014**. Habitus, lateral view. **1015**. Left palp, prolateral view. **1016**. Left palpal femur, retrolateral view. **1017**. Left palp, retrolateral view. **1018**. Chelicerae, frontal view. Scale lines: 1.0 mm (1014), 0.2 mm (1015–1018).

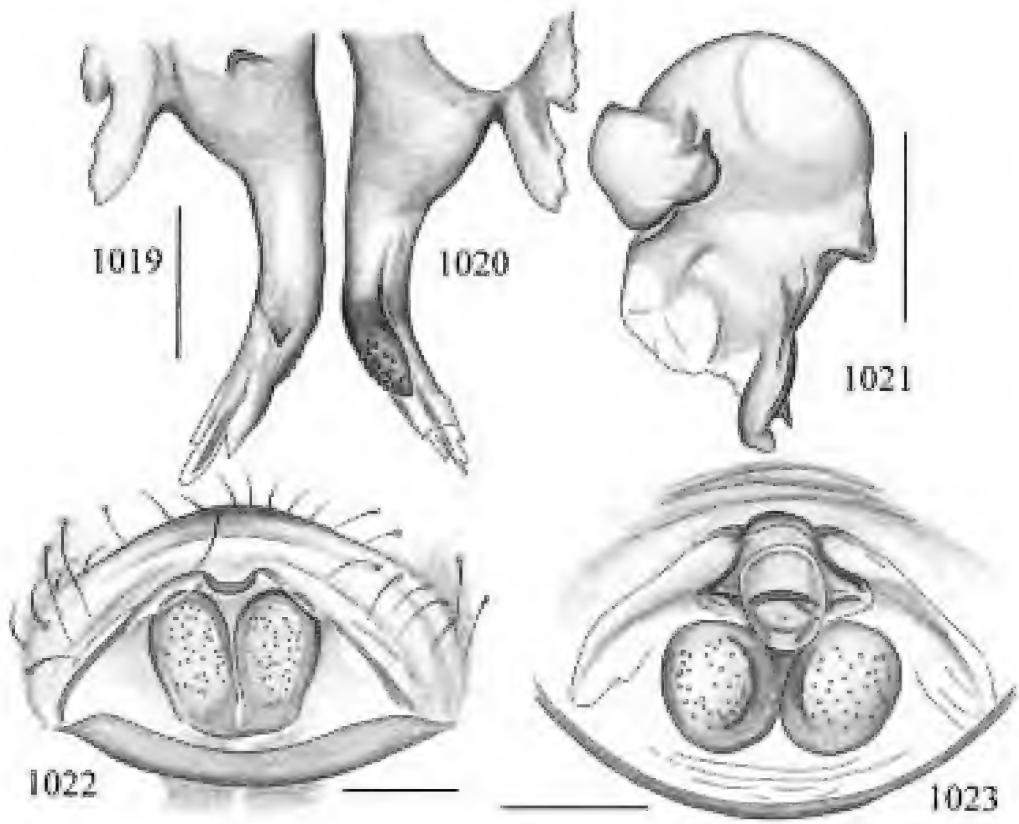
has a wide distribution in northern South America, from southern Colombia and Manaus in Brazil to the Lesser Antilles.

COMPOSITION: The genus as construed here includes 13 named species: the type species *M. longissimus* (which is redescribed below), and 12 further species, 10 of which are newly described below. The two species not treated herein (*M. lemniscatus*, *nigrifrons*) were recently redescribed (Huber, 1997b).

Mecoloesthus longissimus Simon, 1893

Figures 79, 136, 180, 1014–1023

Mecoloesthus longissimus Simon, 1893a: 320–321; 1983b: 479–482, figs. 439, 443, 469.—



Figs. 1019–1023. *Mecoloesthus longissimus* Simon. **1019**. Left procursus, retrolateral view. **1020**. Left procursus, prolateral view. **1021**. Left genital bulb, ~ retrolateral view. **1022**. Epigynum, ventral view. **1023**. Epigynum, dorsal view. Scale lines: 0.2 mm (1021), 0.1 mm (1019–1020, 1022–1023).

Caporiacco, 1955: 299. – Huber, 1997b: 588–591, figs. 12a–e, 13a–d.

TYPES: Male lectotype, 13♂ 3♀ paralectotypes from Tovar (Aragua), and Corosal (Distrito Federal), Venezuela; Jan.-Feb. 1888 (E. Simon), in MNHN (11024), examined (see Huber, 1997b for redescription of this material).

NOTE: Simon's type material contains one slightly deviating male, probably because Simon lumped the material from two different localities (Tovar and Corosal). Discussing these differences, I have previously (Huber, 1997b) not made a decision on the taxonomic status of the "aberrant" male. With the additional material studied herein I tend to see one quite variable species rather than several minimally different ones, primarily because the male palp is almost indistinguishable, even comparing the size of bulb and procursus in individuals of very different body size. (Note that the differences in shape between the drawings of the palp in Huber, 1997b, and those herein result mostly from slightly different angles of view.) Apart from total size, variation mainly occurs in the male chelicerae (see Variation below). The redescription herein deals with populations of rather small individuals, and gives some new data on ultrastructure and variation.

DIAGNOSIS: Distinguished from congeners by the long opisthosoma (especially in the male), and the shape of the procursus (figs. 1019–1020).

MALE (Guatopo Nat. Park): Total length 3.0, carapace width 0.81; leg 1: 32.7 (8.0+0.4+7.7+14.7+1.9), tibia 2 missing, tibia 3: 3.7, tibia 4: 4.1; tibia 1 l/d: 114. Habitus as in fig. 1014; distance PME-ALE about 80% of PME diameter. Carapace ochre to

light brown, with dark Y mark; clypeus light brown, sternum ochre-yellow. Chelicerae light brown, with two pairs of frontal apophyses and pair of sclerotized patches (fig. 1018). Palps as in figs. 1015–1017, femur with conspicuous apophyses (fig. 1016), procursus simple (figs. 1019–1020), with prolateral apophysis subdistally (fig. 1020), bulb as in fig. 1021. Tarsal organ exposed (fig. 79). Legs light brown, femora and tibiae with light distal tips, without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 with ~ 30 pseudosegments. Opisthosoma light greenish, with darker greenish spots dorsally, light brown genital plate, black spot between genital plate and spinnerets; gonopore without epiandrous spigots (fig. 136); ALS with only one piriform gland spigot each (fig. 180).

FEMALE (Guatopo Nat. Park): Total length 2.3; carapace width 0.87; tibia 1 missing, tibia 2: 3.1, tibia 3: 2.3, tibia 4: 2.8. Very similar to male, but anterior part of opisthosoma not so elongated. Epigynum small, very simple, consisting of pair of brown plates between which semispherical pore plates were visible in one individual (fig. 1022). Dorsal view as in fig. 1023.

VARIATION: Tibia 1 in 2 other males from Guatopo Nat. Park: 9.1, 10.4; in one male the ventral black mark on the opisthosoma was a long band rather than a spot. Total length varied as follows (resulting mainly from variation in opisthosoma length): Simon's type material: 4.5–7.0; male from Rancho Grande (see below): 5.7; male from "Golfo Triste" (see below): 3.9; males from Guatopo Nat. Park: 3.0–4.0. The proximal pair of apophyses on the chelicerae is absent in some males (fig. 12E in Huber, 1997b).

DISTRIBUTION: Known from several localities in northern Venezuela (Aragua, Distrito Federal, Miranda, Carabobo).

MATERIAL EXAMINED: VENEZUELA: *Aragua* and *Distrito Federal*: types above; *Aragua*: Rancho Grande near Maracay, Mar. 15–31, 1946 (W. Beebe "et al."), 1♂ in AMNH. *Carabobo*: Golfo Triste (10°40′N, 68°10′W), Sept. 6, 1942 (W. Beebe "et al."), 1♂ 2♀ 1 juvenile in AMNH. *Miranda*: Guatopo Nat. Park, 35 km N Altagracia, Agua Blanca, 400 m elev., May 31–June 7, 1987 (S. & J. Peck), "ravine FITs," 5♂ 1♀ in AMNH; same locality and collectors, June 7–14, 1987, forest streamside, 2♂ in AMNH; same locality and collectors, June 3–10, 1987, forest floor sweeping, 1♀ in AMNH; Guatopo Nat. Park, El Lucero, 700 m elev., May 31–June 7, 1987 (S. & J. Peck), "ravine FIT," 2♂ in AMNH; Guatopo Nat. Park, Santa Cruzita, 450 m elev., Feb. 14, 1984 (J. Coddington), 3♂ 2♀ in USNM; Recreational Club Izcaragua (between Caracas and Guatire), ~ 900 m elev., Jan. 19, 1985 (E. Bardinet & Sobrevila), 1♂ 1 juvenile in USNM.

Mecoloesthus mucuy, new species

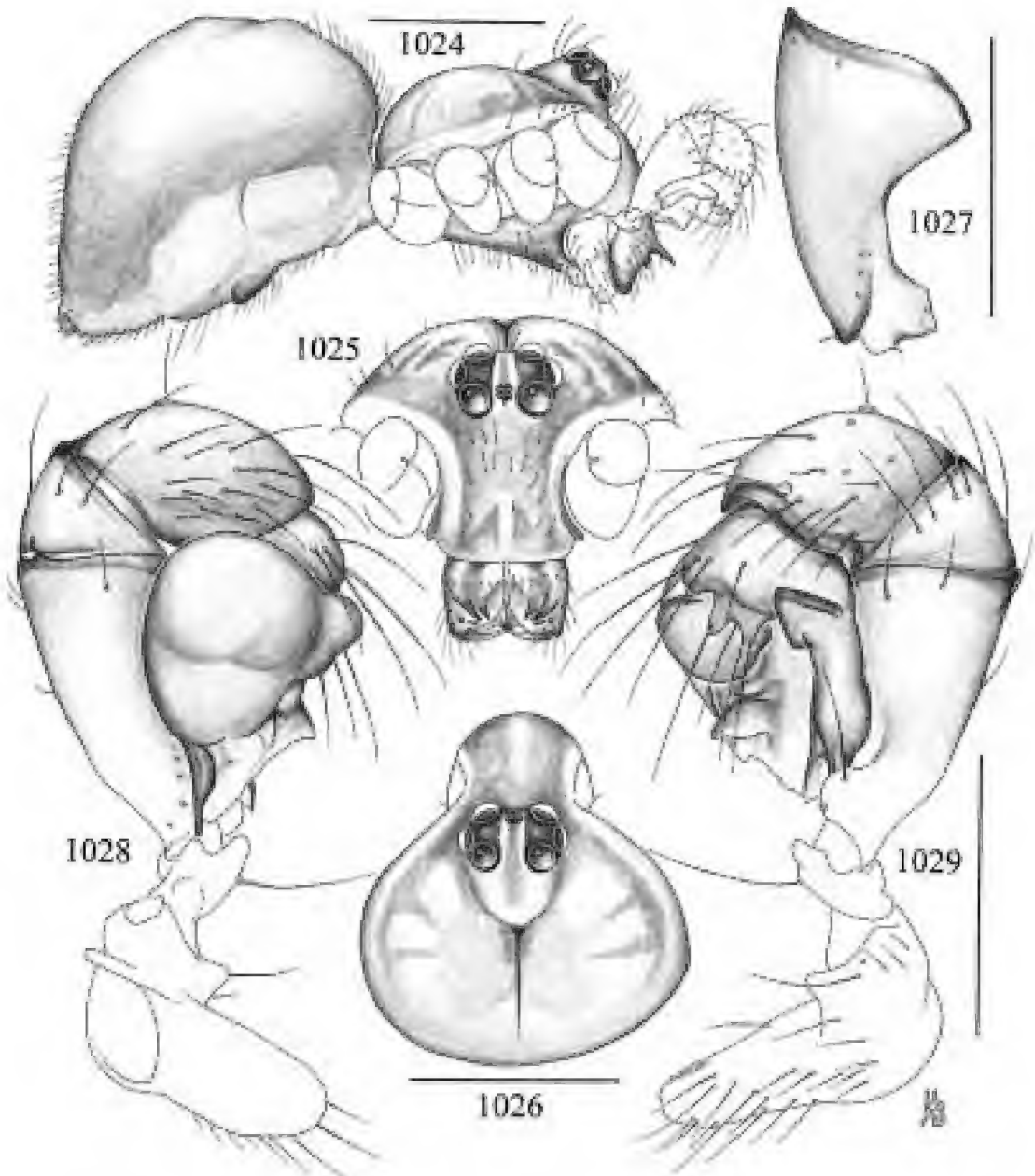
Figures 1024–1033

TYPES: Male holotype, 7♂ paratypes from Tabay Mucuy, Mérida, Venezuela; 2250 m elev., "Send. Lag. Suero," cloud forest, June 17–Aug. 2, 1989 (S. & J. Peck), in AMNH.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from close relatives (*M. azulita*, *peckorum*) by the number and position of apophyses on the male chelicerae (fig. 1030), by the shape of the procursus (figs. 1032–1033), and the embolar division of the bulb (fig. 1031).

MALE (holotype): Total length 3.2, carapace width 1.3; leg 1: 21.2 (4.8+0.4+4.9 +9.1+2.0), tibia 2: 3.1, tibia 3: 2.4, tibia 4: 2.9; tibia 1 l/d: 35. Habitus as in fig. 1024; distance PME-ALE about 80% of PME diameter. Carapace dark ochre-brown, darker anteriorly, posteriorly slightly inflated (figs. 1025–1026); ocular area and clypeus brown. Sternum light to dark brown (dark anteriorly); chelicerae ochre and brown in pattern shown in fig. 1030, with three pairs of inward-facing black apophyses (most distal pair just a sclerotized hump) (fig. 1030). Palps as in figs. 1028–1029, coxa with distinct retrolateral apophysis, femur with retrolateral apophysis proximally and ventral projection distally, procursus with prominent proximal protrusion, distally simple (fig. 1032), bulb as in fig. 1031. Legs light brown, with dark rings on femora (subdistally) and tibiae (proximally and subdistally), without spines, without curved and vertical hairs; re-



Figs. 1024–1029. *Mecoloesthus mucuy*, n. sp., male. **1024**. Habitus, lateral view. **1025–1026**. Prosoma, frontal and dorsal views. **1027**. Left palpal femur, prolateral view. **1028**. Left palp, prolateral view. **1029**. Left palp, retrolateral view. Scale lines: 1.0 mm (1024–1026), 0.5 mm (1027–1029).

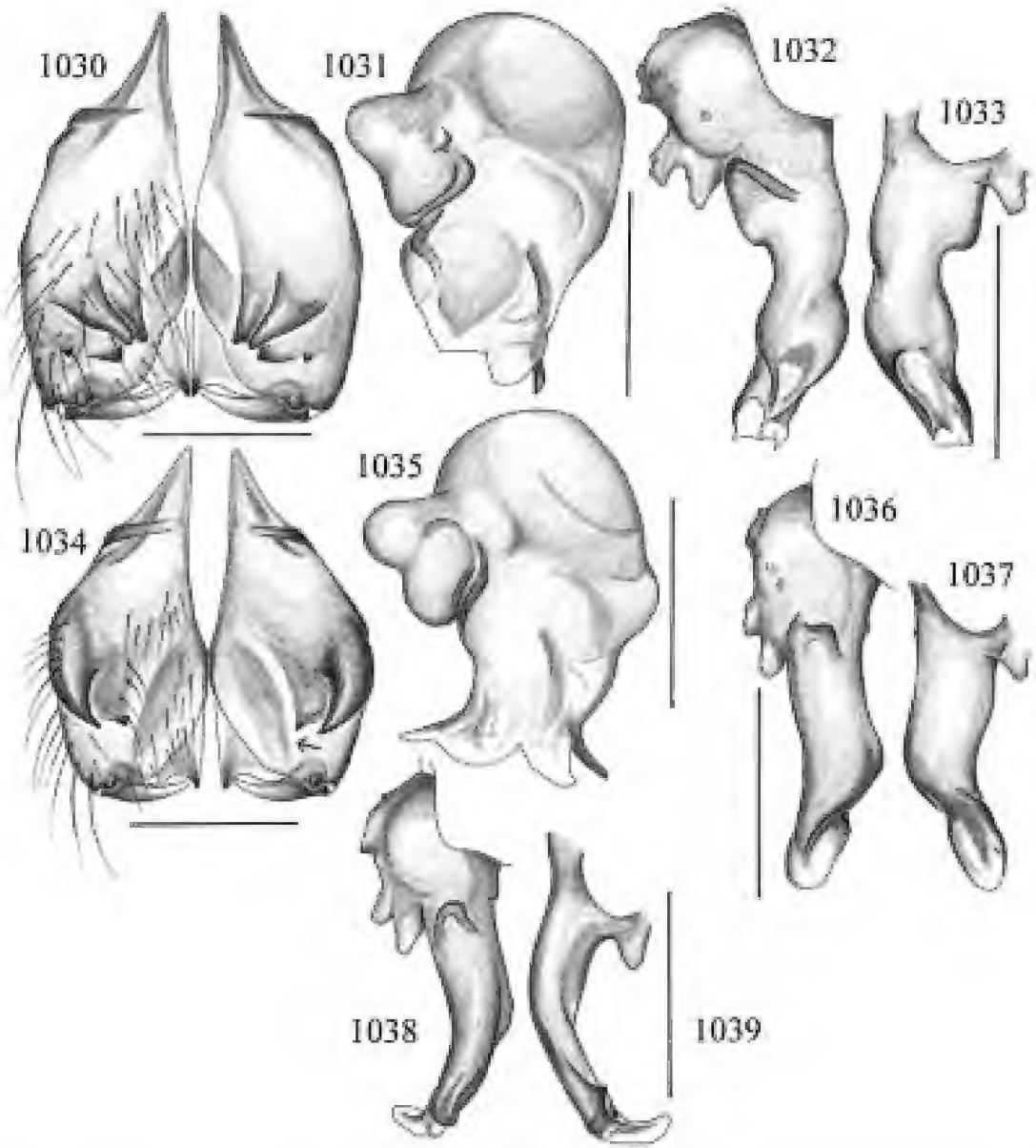
trolateral trichobothrium of tibia 1 at 5%; tarsus 1 with ~ 25 pseudosegments. Opisthosoma as in fig. 1024, very dark bluish.

VARIATION: Tibia 1 in 4 other males: 4.7–5.4.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: VENEZUELA: *Mérida*: Tabay Mucuy: types above.



Figs. 1030–1039. *Mecoloesthus spp.* 1030–1033. *M. mucuy*, n. sp., male. **1030**. Chelicerae, frontal view. **1031**. Left genital bulb, retrolateral view. **1032**. Left procursus with cymbium, retrolateral view. **1033**. Left procursus, prolateral view. 1034–1037. *M. azulita*, n. sp., male. **1034**. Chelicerae, frontal view (arrow points to area where the closely related *M. peckorum*, n. sp. has some additional tiny cones). **1035**. Left genital bulb, retrolateral view. **1036**. Left procursus with cymbium, retrolateral view. **1037**. Left procursus, prolateral view. 1038–1039. *M. peckorum*, n. sp., male. **1038**. Left procursus with cymbium, retrolateral view. **1039**. Left procursus, prolateral view. Scale lines: 0.3 mm.

Mecoloesthus azulita, new species

Figures 1034–1037

TYPES: Male holotype from 20 km SE Azulita (''ULA Biol. Res. La Carbonera''), Mérida, Venezuela; 2300 m elev., ''Podocarp forest,'' June 28–Aug. 3, 1989 (S. & J. Peck), in AMNH; 1♂ paratype from same locality, ''Podocarp forest, carriontips,''

June 28–July 27, 1989 (S. & J. Peck), in AMNH.

ETYMOLOGY: Named for the town close to the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from close relatives (*M. mucuy*, *peckorum*, *tabay*) by the single pair of short, curved, pointed apophyses laterally on the male chelicerae (fig. 1034), by the shape of the procursus (figs. 1036–1037), and the embolar division of the bulb (fig. 1035).

MALE (holotype): Total length 3.0, carapace width 1.3; femur 1: 4.5 (other segments missing), tibia 2: 3.1, tibia 3: 2.5, tibia 4: 3.1. Habitus and prosoma shape as in *M. mucuy* (cf. figs. 1024–1026); distance PME-ALE about 90% of PME diameter. Carapace dark brown, ocular area and clypeus even darker, sternum brown; chelicerae with pair of short curved apophyses laterally, and pair of tiny black cones (fig. 1034). Palps in general as in *M. mucuy* (cf. figs. 1028–1029), procursus and bulb as in figs. 1035–1037. Legs light brown, without any rings; without spines, without curved and vertical hairs. Opisthosoma dark greenish.

Leg 1 in male paratype: 21.2 (4.8+0.5 +5.0+8.9+2.0), tibia 1 l/d: 38.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: VENEZUELA: *Mérida*: 20 km SE Azulita: types above.

Mecoloesthus peckorum, new species

Figures 1038–1039

TYPE: Male holotype from Mérida ("Telef. Est. La Montaña"), Mérida, Venezuela; 2450 m elev., cloud forest, June 27–July 26, 1989 (S. & J. Peck), in AMNH.

ETYMOLOGY: Named for the collectors of the type material.

DIAGNOSIS: Very closely related to *M. azulita*, distinguished only by the procursus, which is more slender and has a bent tip (compare figs. 1036–1039), and by the male chelicerae, which are provided with several additional tiny sclerotized cones frontally (arrow in fig. 1034).

MALE (holotype): Total length 2.4, carapace width 1.1. Legs 1 and 2 missing; tibia 3: 2.5, tibia 4: 3.0. Habitus and prosoma shape as in *M. mucuy* (cf. figs. 1024–1026); distance PME-ALE about 90% of PME diameter. Prosoma brown, sternum slightly lighter; chelicerae with large lateral apophyses as in *M. azulita* (cf. fig. 1034), but with some additional small black cones frontally (arrow in fig. 1034). Palps in general as in *M. mucuy* (cf. figs. 1028–1029), procursus as in figs. 1038–1039; bulb as in *M. azulita* (cf. fig. 1035). Legs light brown, without any rings (as in *M. azulita*); without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 6%. Opisthosoma dark greenish.

VARIATION: The second male is larger (carapace width 1.4; leg 1: 5.6+0.5+5.7, metatarsus and tarsus missing; tibia 2: 3.7, tibia 3: 2.9, tibia 4: 3.5; tibia 1 l/d: 37), but otherwise not distinguishable.

FEMALE: Unknown.

DISTRIBUTION: Known from two localities in Mérida, Venezuela.

MATERIAL EXAMINED: VENEZUELA: *Mérida*: Mérida: type above; Mérida, "Hechicera, Monte Zerpa," 2000 m elev., montane forest, July 22–Aug. 2, 1989 (S. & J. Peck), 1♂ in AMNH.

Mecoloesthus tabay, new species

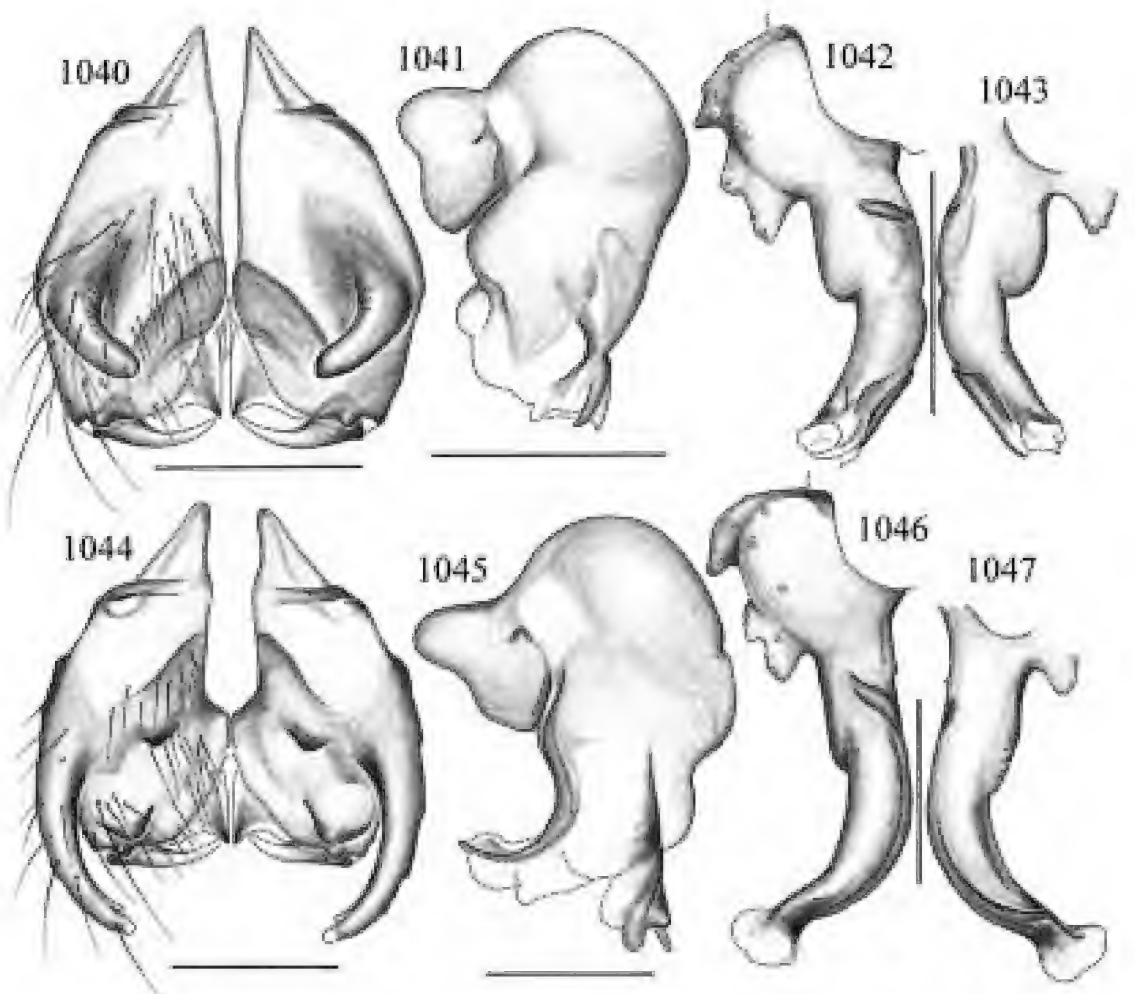
Figures 1040–1043

TYPE: Male holotype from Mérida ("Telef. Est. La Montaña"), Dept. Mérida, Venezuela; 2450 m elev., cloud forest, June 27–July 26, 1989 (S. & J. Peck), in AMNH.

ETYMOLOGY: Named for one of the collection sites, Tabay Mucuy Nat. Park. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from close relatives (*M. mucuy*, *azulita*, *peckorum*) by the rounded, inward-facing apophyses on the male chelicerae (fig. 1040), and the shape of the procursus (figs. 1042–1043).

MALE (holotype): Total length 2.8, carapace width 1.2; leg 1: 22.3 (5.1+0.5+5.1 +9.6+2.0), tibia 2: 3.3, tibia 3: 2.5, tibia 4: 2.9; tibia 1 l/d: 38. Habitus and prosoma shape as in *M. mucuy* (cf. figs. 1024–1026); distance PME-ALE about 90% of PME diameter. Prosoma brown, chelicerae with large rounded lateral apophyses, and another smaller pair (hidden by large apophyses in



Figs. 1040–1047. *Mecoloesthus* spp. 1040–1043. *M. tabay*, n. sp., male. **1040**. Chelicerae, frontal view. **1041**. Left genital bulb, retrolateral view. **1042**. Left procursus with cymbium, retrolateral view. **1043**. Left procursus, prolateral view. 1044–1047. *M. cornutus*, n. sp., male. **1044**. Chelicerae, frontal view. **1045**. Left genital bulb, retrolateral view. **1046**. Left procursus with cymbium, retrolateral view. 1047. Left procursus, prolateral view. Scale lines: 0.3 mm.

fig. 1040). Palps in general as in *M. mucuy* (cf. figs. 1028–1029), procursus and bulb as in figs. 1041–1043. Legs light brown, with dark rings on femora (subdistally), and tibiae (proximally, subdistally), dark rings on femora preceded by light rings; without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 5%; tibia 1 with ~ 36 pseudosegments (very distinct!). Opisthosoma dark greenish-gray. (Tibia 1 in other male: 5.3.)

FEMALE: Unknown.

DISTRIBUTION: Known from two localities in Mérida, Venezuela.

MATERIAL EXAMINED: VENEZUELA: *Mérida*: Mérida: type above; Tabay Mucuy, "Send. Lag. Suero," cloud forest, 2700 m elev., June 19–July 24, 1989 (S. & J. Peck), 1♂ in AMNH.

Mecoloesthus cornutus, new species

Figures 1044–1047

TYPES: Male holotype, 3♂ paratypes from El Valle, 5 km NE Mérida, Mérida, Vene-

zuela; 2400 m elev., cloud forest, June 24–Aug. 2, 1989 (S. & J. Peck), in AMNH.

ETYMOLOGY: The specific name is an adjective referring to the long male cheliceral apophyses.

DIAGNOSIS: Distinguished from congeners by the long curved apophyses laterally on the male chelicerae (fig. 1044), by the shape of the procursus (figs. 1046–1047), and the embolar division of the bulb (fig. 1045).

MALE (holotype): Total length 2.8, carapace width 1.3; leg 1: 23.6 (5.3+0.5+5.5 +10.3+2.0), tibia 2: 3.3, tibia 3: 2.5, tibia 4: 2.9; tibia 1 l/d: 39. Habitus and prosoma shape as in *M. mucuy* (cf. figs. 1024–1026); coloration and general structure as in *M. mucuy*; distance PME-ALE about 80% of PME diameter. Chelicerae with pair of very long curved apophyses laterally, and two pairs of smaller humps frontally (fig. 1044). Palps in general as in *M. mucuy* (cf. figs. 1028–1029), procursus and bulb as in figs. 1045–1047. Legs as in *M. mucuy*, but with light rings immediately before and after dark rings; without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 5%; tarsus 1 with ~ 30 pseudosegments. Opisthosoma as in *M. mucuy*, but with dark spots dorsally.

VARIATION: Tibia 1 in 2 other males: 5.0, 5.5.

FEMALE: Unknown.

DISTRIBUTION: Known from four localities in Mérida, Venezuela.

MATERIAL EXAMINED: VENEZUELA: *Mérida*: El Valle: types above; Tabay Mucuy, "Send. Lag. Suero," cloud forest, 2250 m elev., June 17–Aug. 2, 1989 (S. & J. Peck), 1♂ in AMNH; Mérida, "Telef. Est. La Montaña," 2450 m elev., cloud forest, June 27–July 26, 1989 (S. & J. Peck), 1♂ in AMNH; Mérida, "Hechicera, Monte Zerpa," 2000 m elev., montane forest, July 22–Aug. 2, 1989 (S. & J. Peck), 1♂ in AMNH.

Mecoloesthus yawaperi, new species

Figures 1048–1054

TYPES: Male holotype ("T11 N-A"), 2♂ paratypes ("T2 N-B," "T14 N-E"), from Dimona Reserve, near Manaus, Amazonas, Brazil; 1989–1992 (H. G. Fowler), in MCZ.

ETYMOLOGY: The specific name is a noun in apposition honoring the Yawaperi Indians living north of Manaus in Brazil, who have been widely known for their "aggressiveness" in protecting their land and identity.

DIAGNOSIS: Distinguished from congeners by the pair of tiny frontal apophyses on the male chelicerae (fig. 1049), the slender and simple procursus (figs. 1050–1051), and the shape of the ventral apophysis distally on the male palpal femur (fig. 1048).

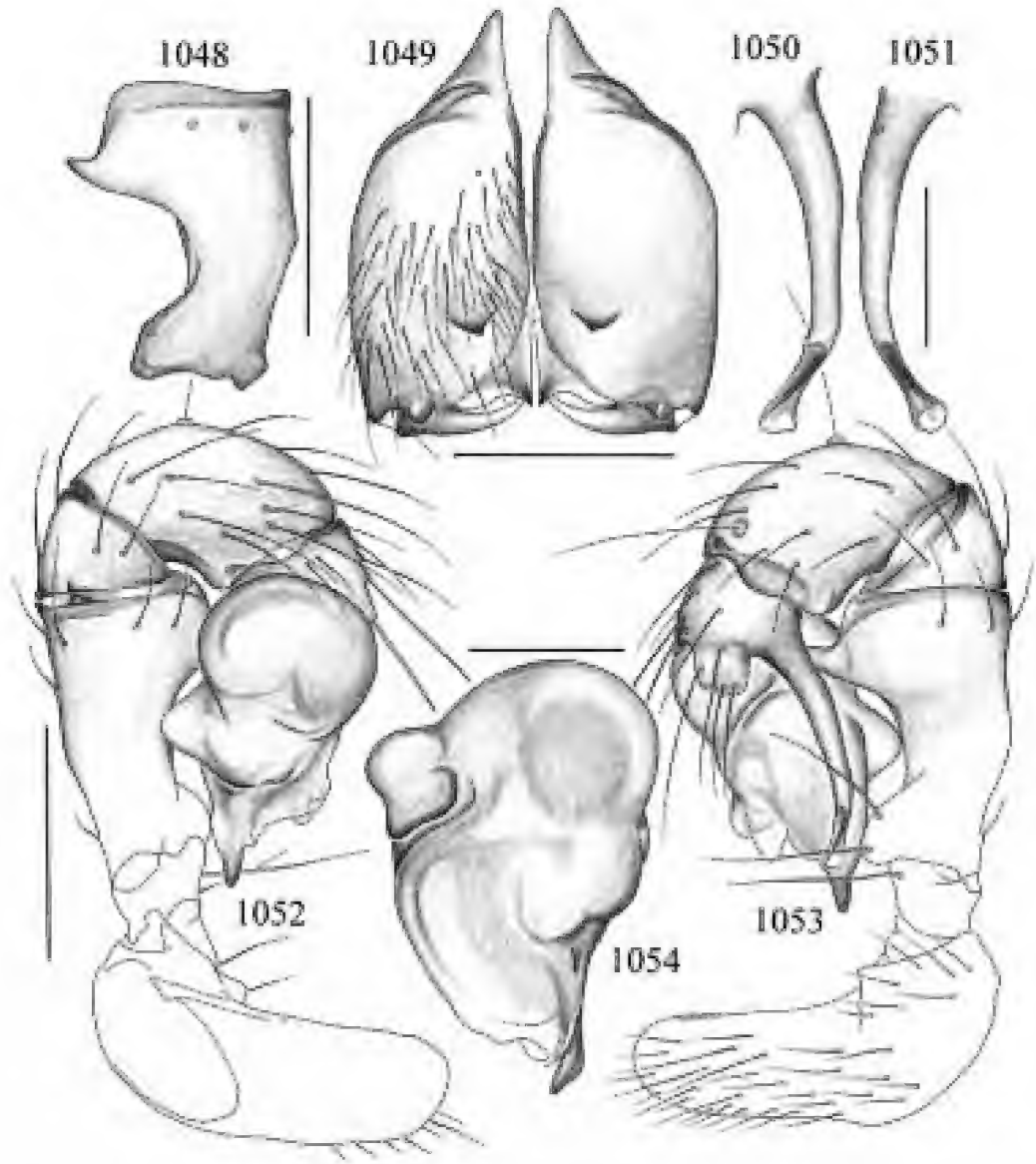
MALE (holotype): Total length 2.2, carapace width 1.0; leg 1: 27.2 (6.4+0.3+6.7 +11.7+2.1), tibia 2: 3.9, tibia 3: 2.7, tibia 4: 3.5; tibia 1 l/d: 100. Prosoma as in *M. mucuy* (cf. figs. 1024–1026), but ocular area slightly less elevated, and distance PME-ALE smaller (~ 50% of PME diameter). Carapace ochre-brown, slightly inflated posteriorly but with distinct thoracic groove; clypeus with pair of darker stripes, sternum ochre-brown, without humps. Chelicerae brown, with pair of small apophyses frontally (fig. 1049). Palps as in figs. 1052–1053, coxa with retrolateral apophysis, femur with retrolateral apophysis proximally and distinct ventral apophysis distally (fig. 1048), procursus simple (figs. 1050–1051), bulb as in fig. 1054. Legs light brown, without rings, without spines and curved hairs; with vertical hairs on metatarsi; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 with over 30 pseudosegments. Opisthosoma as in *M. mucuy* (cf. fig. 1024) but slightly longer, pale greenish, with hardly visible darker spots dorsally, ventrally with darker band from genital plate halfway to spinnerets.

VARIATION: Tibia 1 in paratype: 5.7 (missing in other paratype). One male paratype ("T14 N-E") with some distinct bluish-white spots and stripes on opisthosoma.

FEMALE: Unknown (a prosoma, possibly of a conspecific female, accompanies the male holotype; it is very similar to the male prosoma, also slightly inflated; tibia 1: 4.3).

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BRAZIL: *Amazonas*: Manaus, Dimona Reserve: types above, and female prosoma accompanying holotype.



Figs. 1048–1054. *Mecoloesthus yawaperi*, n. sp., male. **1048**. Left palpal femur, retrolateral view. **1049**. Chelicerae, frontal view. **1050**. Left procursus, retrolateral view. **1051**. Left procursus, prolateral view. **1052**. Left palp, prolateral view. **1053**. Left palp, retrolateral view. **1054**. Left genital bulb, retrolateral view. Scale lines: 0.2 mm (1048–1049, 1052–1053), 0.1 mm (1050–1051, 1054).

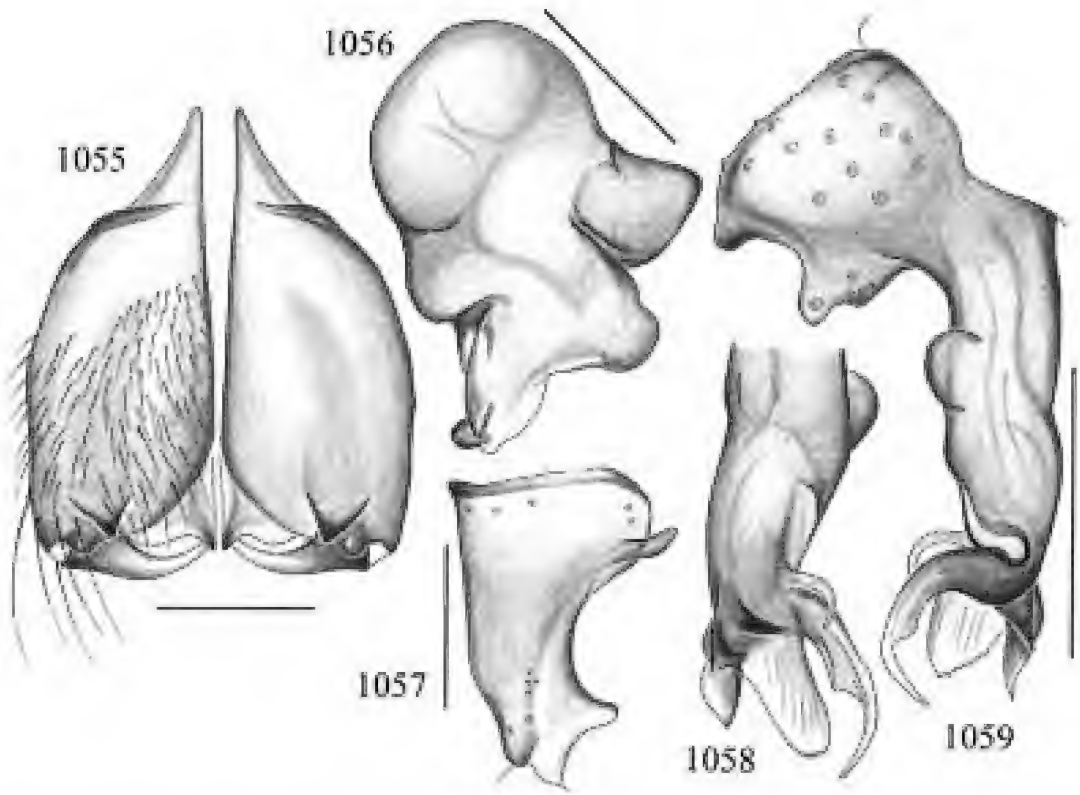
Mecoloesthus putumayo, new species
Figures 1055–1059

TYPE: Male holotype from near Puerto Asis, Rio Putumayo, Dept. Putumayo, Colombia; no date (W. G. Eberhard), in MCZ.

ETYMOLOGY: Named for the Colombian state Putumayo. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from congeners by the procursus with complicated tip composed of lamellae and apophyses (figs. 1058–1059), and the male palpal femur with its distinctive ventral apophysis (fig. 1057).

MALE (holotype): Carapace width 1.1, opisthosoma missing; leg 1: 53.9 (12.8+0.5 +12.8+24.9+2.9), tibia 2: 7.1, tibia 3: 5.3,



Figs. 1055–1059. *Mecoloesthus putumayo*, n. sp., male. **1055**. Chelicerae, frontal view. **1056**. Right genital bulb, retrolateral view. **1057**. Left palpal femur, prolateral view. **1058**. Left procursus, prolateral view. **1059**. Left procursus and cymbium, retrolateral view. Scale lines: 0.2 mm.

tibia 4: 6.9; tibia 1 l/d: 113. Prosoma slightly damaged, but apparently very similar to *M. mucuy* (cf. figs. 1024–1026); distance PME-ALE about 80% of PME diameter. Carapace light ochre with large median brown mark and brown lateral margins, slightly inflated posteriorly; clypeus dark brown, sternum pale ochre-yellow. Chelicerae light brown, with pair of blackish apophyses frontally (fig. 1055). Palps in general very similar to *M. mucuy* (cf. figs. 1028–1029), coxa with retrolateral apophysis, femur with distinct ventral apophysis distally (fig. 1057), procursus with complex tip (figs. 1058–1059), bulb as in fig. 1056. Legs light ochre, distal tips of tibiae light; legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 1.5%; tarsus 1 with over 35 pseudosegments.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: COLOMBIA: *Putumayo*: near Puerto Asis: type above.

Mecoloesthus arima, new species

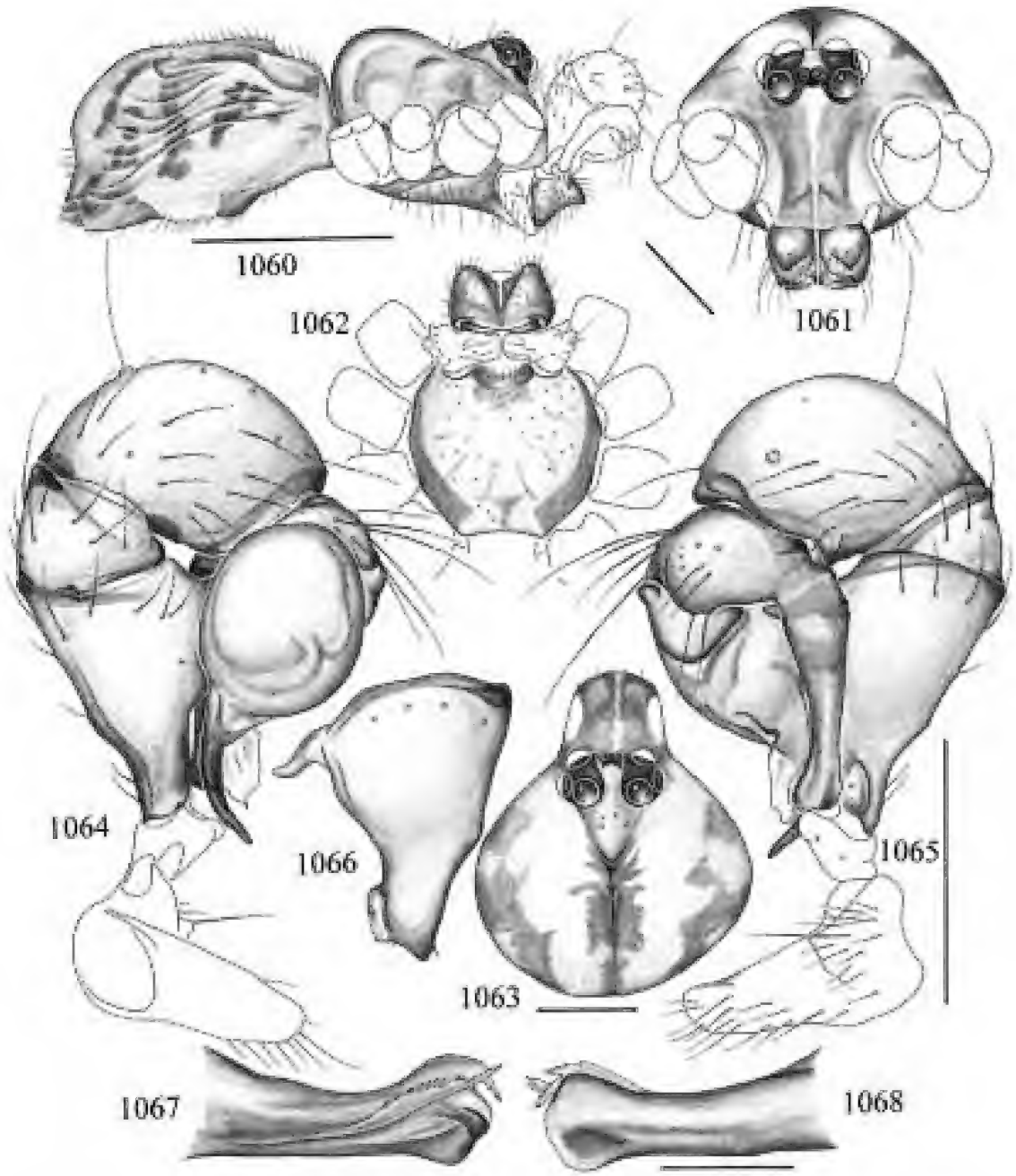
Figures 1060–1068

TYPE: Male holotype from Arima Valley, Trinidad; 800–1200 ft elev., Feb. 10–22, 1964 (P. Wygodzinski & J. Rozen), in AMNH.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Easily distinguished from congeners by the shape of the procursus (figs. 1065, 1067–1068), the long bulbal apophysis (fig. 1064), the shape of the male palpal femur apophysis (fig. 1066) and the strong apophyses on the male chelicerae (figs. 1060–1061).

MALE (holotype): Total length 2.5, carapace width 1.1, legs 1–3 missing; leg 4: 17.9 (5.0+0.4+4.5+7.0+1.5). Habitus as in fig.



Figs. 1060–1068. *Mecoloesthus arima*, n. sp., male. **1060**. Habitus, lateral view. **1061–1063**. Prosoma, frontal, ventral, and dorsal views. **1064**. Left palp, prolateral view. **1065**. Left palp, retrolateral view. **1066**. Left palpal femur, retrolateral view. **1067–1068**. Left procursus tip, prolateral (1067) and retrolateral (1068) views. Scale lines: 1.0 mm (1060), 0.4 mm (1061–1066), 0.1 mm (1067–1068).

1060; distance PME-ALE about 70% of PME diameter. Carapace orange-ochre, brown medially and laterally, conspicuously inflated posteriorly (figs. 1060–1061, 1063), ocular area brown, clypeus brown, sternum light orange-ochre, with reddish-brown margins (fig. 1062). Chelicerae brown, produced anteriorly into pair of large apophyses (figs. 1060–1061). Palps as in figs. 1064–1065, coxa with retrolateral apophysis, femur with retrolateral apophysis proximally, distinct ventral apophysis distally (fig. 1066), procursus as in figs. 1067–1068, bulb with transparent projection accompanying simple long apophysis (fig. 1064). Legs light brown, femora and tibiae with slightly lighter tips; legs 4 without spines, without curved and vertical hairs; tarsus 4 with ~ 20 pseudosegments. Opisthosoma in holotype shrunken (fig. 1060), in other male (see below) like in *M. mucuy* (cf. fig. 1024), pale greenish, with distinct black spots arranged in lines, genital plate wide, light brown, short black stripe behind genital plate.

Measurements of other male (see below): carapace width: 1.15; leg 1: 36.5 (8.8+0.4 +8.8+16.5+2.0), tibiae 2 and 4 missing, tibia 3: 3.9; tibia 1 l/d: 110; retrolateral trichobothrium of tibia 1 at 2%; tarsus 1 with over 30 pseudosegments.

FEMALE: Unknown.

DISTRIBUTION: Known only from Arima Valley, Trinidad.

MATERIAL EXAMINED: TRINIDAD: *St. George Co.*: Arima Valley: type above; Simla, Arima Valley, Apr. 18, 1964 (A. M. Chickering), 2♂ in AMNH.

Mecoloesthus hoti, new species
Figures 1069–1076

TYPE: Male holotype from Rio Baria, Dept. Amazonas, Venezuela; ~ 100 m elev., "from overhead vegetation fell into dugout canoe," July 21, 1984 (L. S. Ford & C. W. Myers), in AMNH.

ETYMOLOGY: The specific name is a noun in apposition honoring the Hotí, an Indian people in the state of Bolívar who have maintained their cultural identity partly by the relative inaccessibility of their territory.

DIAGNOSIS: Easily distinguished from any known pholcid by the bulky male pedipalp (fig. 1075), the uniquely formed procursus (figs. 1073, 1075), and the cheliceral armature (fig. 1076).

MALE (holotype): Total length 2.8, carapace width 1.2; leg 1: 35.2 (8.5+0.4+8.1 +15.5+2.7), tibia 2: 5.1, tibia 3: 3.9, tibia 4: 5.1; tibia 1 l/d: 101. Habitus and prosoma as in figs. 1069–1072. Carapace light brown, inflated posteriorly, but with distinct thoracic groove between inflation and ocular area; eight eyes on moderately elevated ocular area; distance PME-ALE about 50% of PME diameter. Sternum light orange-brown; chelicerae light brown, with two pairs of apophyses, median pair distinctively shaped (fig. 1076). Palps as in figs. 1074–1075, light brown, procursus black; coxa with narrow retrolateral apophysis, femur proximally with rounded retrolateral apophysis, distally with distinct ventral apophysis and sclerotized hump (fig. 1075), procursus bent inwards in sharp angle, with field of sclerotized ridges retrolaterally and large rounded protrusion dorsally (fig. 1073), bulb with slightly spiraling sclerite and semitransparent projection dorsally (fig. 1074). Legs brown with light tips on femora and tibiae; without spines and curved hairs, with some vertical hairs on metatarsi; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 with over 35 pseudosegments. Opisthosoma ochre-gray, with dark spots dorsally.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

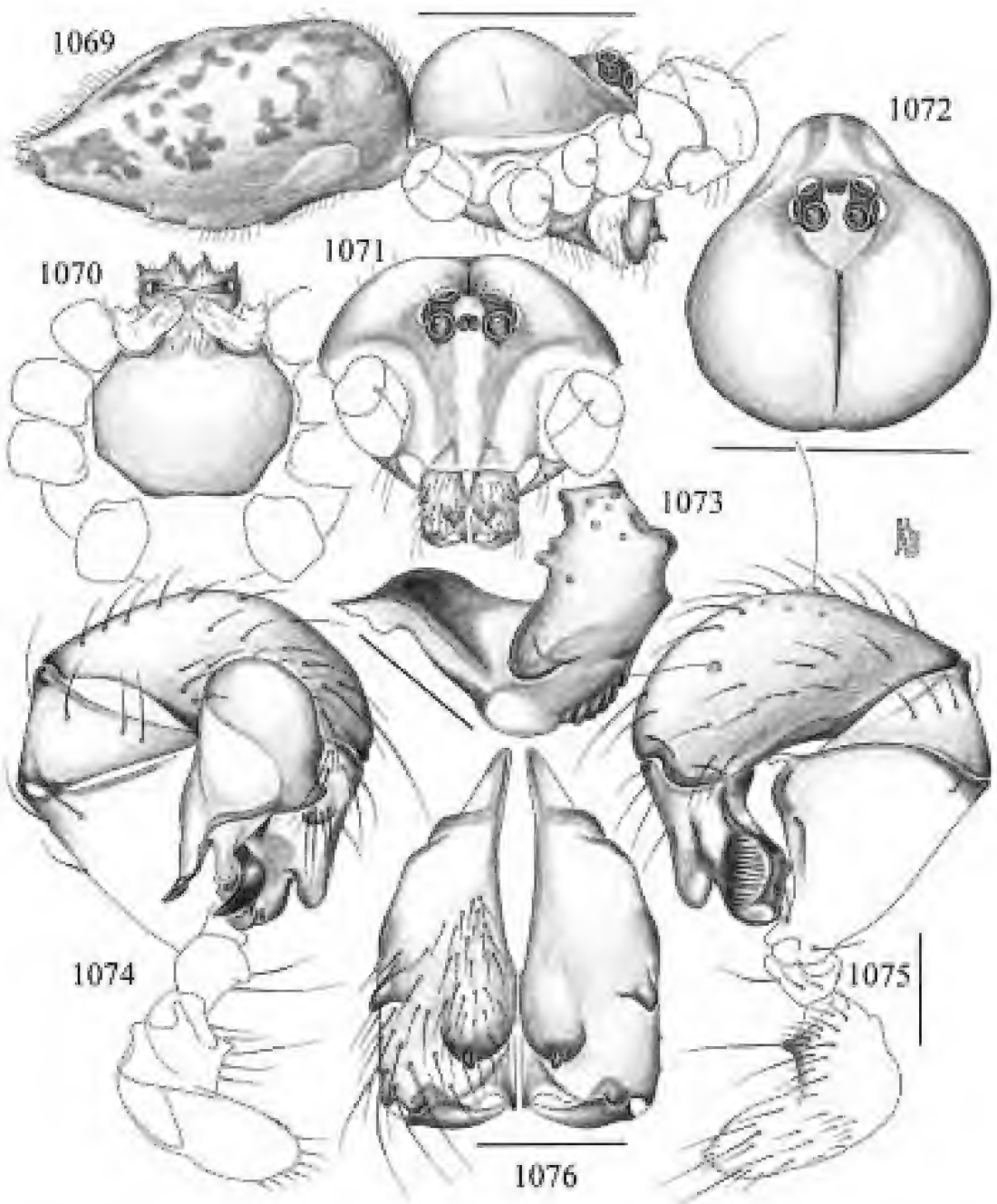
MATERIAL EXAMINED: VENEZUELA: *Amazonas*: Rio Baria: type above.

Mecoloesthus taino, new species
Figures 1077–1089

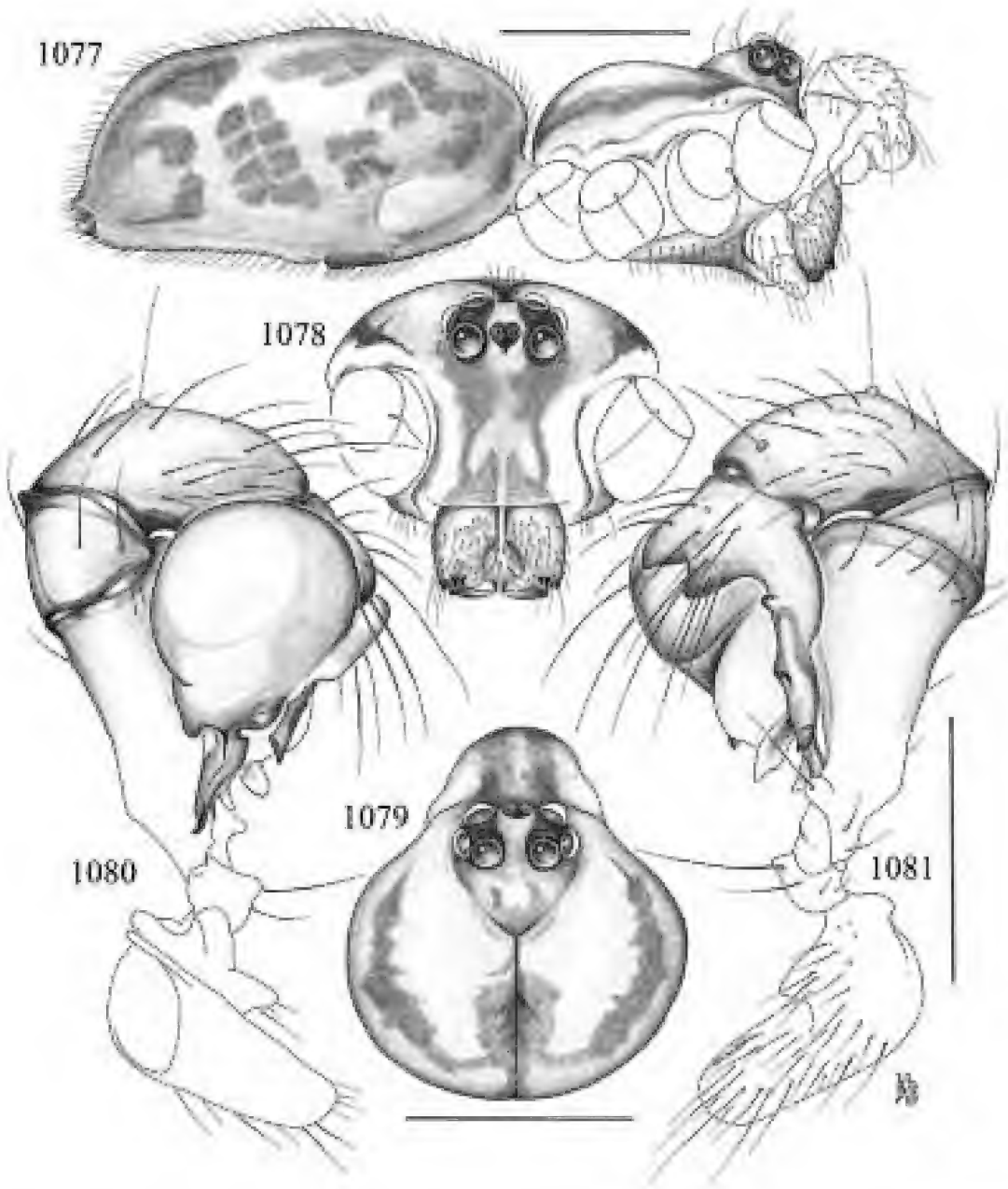
TYPES: Male holotype, 1♂ 2♀ paratypes from "La maison de la Foret," Basse Terre, Guadeloupe, Lesser Antilles; Aug. 1983 (A. Lopez), in AMNH.

ETYMOLOGY: The specific name is a noun in apposition honoring the Taíno of the West Indies (see *Tainonia*, p. 145).

DIAGNOSIS: Close relative of *M. lemniscatus* (Simon) and *M. nigrifrons* (Simon), easily distinguished from both by the pair of apophyses on the epigynum (figs. 1087–1088).

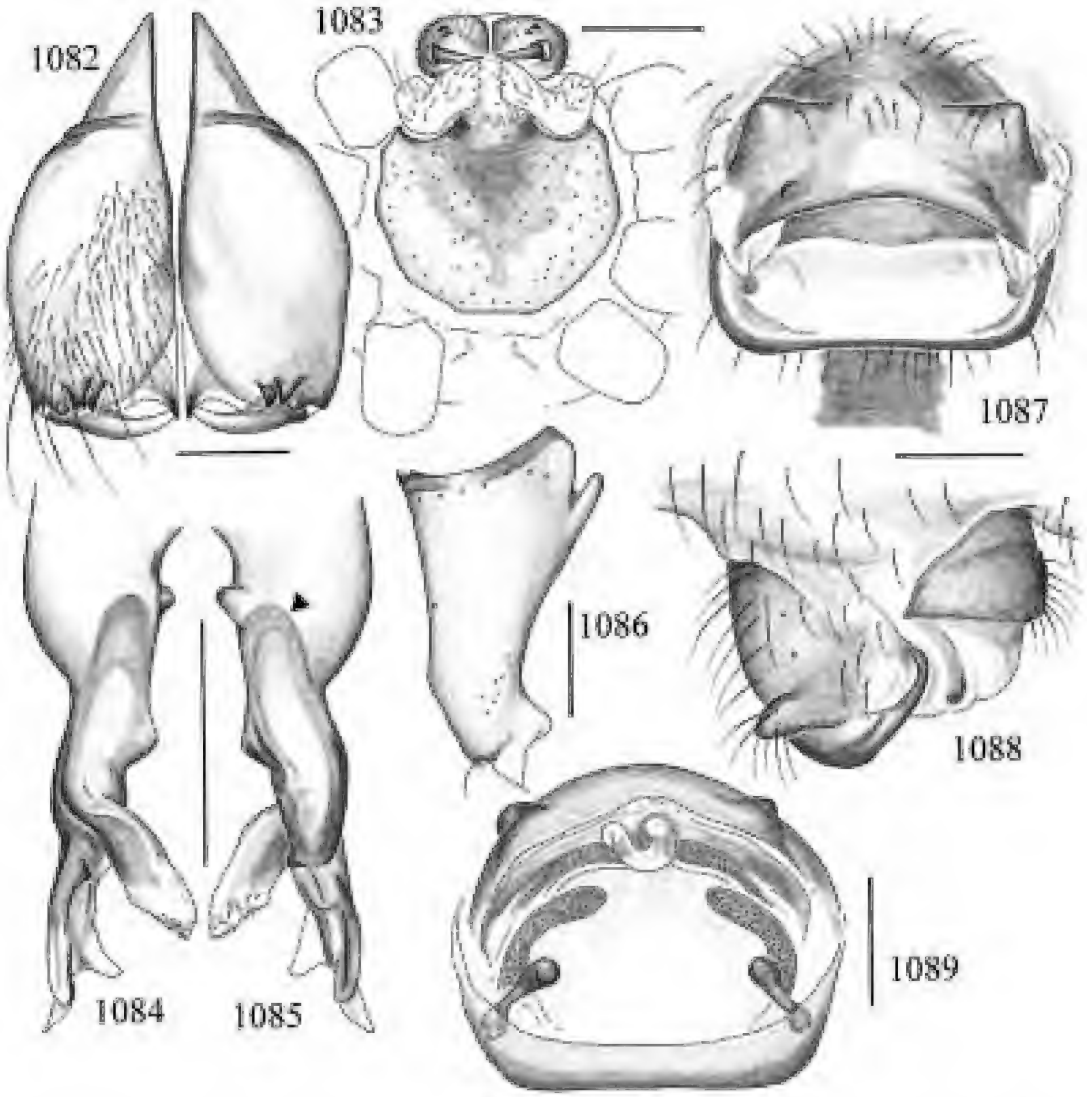


Figs. 1069–1076. *Mecoloesthus hoti*, n. sp., male. **1069**. Habitus, lateral view. **1070–1072**. Prosoma, ventral, frontal, and dorsal views. **1073**. Cymbium with procursus, dorsal view. **1074**. Left palp, prolateral view. **1075**. Left palp, retrolateral view. **1076**. Chelicerae, frontal view. Scale lines: 1.0 mm (1069–1072), 0.2 mm (1073–1076).



Figs. 1077–1081. *Mecoloesthus taino*, n. sp., male. **1077**. Habitus, lateral view. **1078–1079**. Prosoma, frontal and dorsal views. **1080**. Left palp, prolateral view. **1081**. Left palp, retrolateral view. Scale lines: 1.0 mm (1077–1079), 0.5 mm (1080–1081).

MALE (holotype): Total length 3.9, carapace width 1.5; leg 1: (11.9+0.6+11.6+> 18.1, tarsus missing), tibia 2: 6.7, tibia 3: 4.8, tibia 4: 6.1; tibia 1 l/d: 94. Habitus and prosoma as in figs. 1077–1079. Carapace ochre with brown pattern (fig. 1079), inflated posteriorly, but with distinct thoracic groove between inflated part and ocular area; eight eyes on moderately elevated brown ocular area; distance PME-ALE about 70% of PME



Figs. 1082–1089. *Mecoloesthus taino*, n. sp. **1082**. Male chelicerae, frontal view. **1083**. Male prosoma, ventral view. **1084**. Left procursus, prolateral view. **1085**. Left procursus, retrolateral view (arrow points to internal "reservoir"). **1086**. Left palpal femur, prolateral view. **1087–1088**. Epigynum, ventral and lateral views. **1089**. Epigynum, dorsal view. Scale lines: 0.5 mm (1083), 0.2 mm (1082, 1084–1089).

diameter. Clypeus with brown pattern (fig. 1078), sternum ochre with brown triangle anteriorly (fig. 1083); chelicerae brown, with two contiguous black apophyses on each side (fig. 1082). Palps as in figs. 1080–1081, ochre to dark brown; coxa with distinct retrolateral apophysis, femur with small retrolateral apophysis proximally and distinct ventral apophysis distally (fig. 1086), procursus with dorsal process subdistally and transparent laminae distally (figs. 1084–1085), bulb with flat sclerite dorsally, short spinelike process prolaterally, and a prominent apophysis distally (fig. 1080). Legs light, with slightly darker rings on femora (subdistally) and tibiae (proximally and subdistally); without spines and curved hairs, with some vertical hairs on all segments; re-

trolateral trichobothrium of tibia 1 at 2%; tarsus 1 with ~ 30 pseudosegments. Opisthosoma greenish-gray, with large darker spots dorsally, genital plate dark brown; behind genital plate dark band halfway to spinnerets.

VARIATION: Tibia 1 in four males (incl. types): 9.6–11.7; in the paratype the margin of the sternum is darker. The specimens from Dominica are smaller, but the genitalia and chelicerae appear to be identical.

FEMALE (paratypes): Total length 3.9; tibia 1: 9.5, 9.9; prosoma only slightly inflated posteriorly. Epigynum brown, prominent, with pair of anterior apophyses (figs. 1087–1088), internal genitalia with transparent median blind sac and apparently divided pore plates (fig. 1089; in the KOH preparation it was difficult to see whether both plates are actually provided with the typical pores).

DISTRIBUTION: Known from the Lesser Antilles: Guadeloupe, Dominica; the label in one additional vial reads "Landat Dom."

MATERIAL EXAMINED: GUADELOUPE: Basse Terre: types above. DOMINICA: Fresh Water Lake, 850 m elev., Feb. 4, 1968 (B. Malkin), 1♂ 1♀ in AMNH; Long Ditton, June 18, 1911 ("M. I."), 1♂ in AMNH; Clarke Hall, "molasses jars," Oct. 12, 1966 (A. B. Gurney), 1♂ 1♀ in USNM; Clarke Hall, Apr. 5, 1965 (D. R. Davis), 1♂ 2♀ in USNM; l'Eau Goumier, Mar. 13, 1956 (J.F.G. Clarke), 1♀ in USNM.

KALIANA, NEW GENUS

TYPE SPECIES: *Kaliana yuruani*, new species.

ETYMOLOGY: The generic name honors the Kaliana Indians, a riverine people in Bolívar, Venezuela, widely known and respected among other Indians for their elaborate healing and religious rituals. By the 1980s, about 15 Kaliana were still alive. Gender feminine.

DIAGNOSIS/DESCRIPTION: See diagnosis and description of single known species below.

GENERIC RELATIONSHIPS: The apophysis ventrally on the male palpal femur is similar in position and direction (i.e., pointing in a proximal direction) to that in some other mainly Venezuelan genera (*Mecoloesthus*, *Systenita*, *Coryssocnemis*). Also, the sclerotized area at the basis of the cheliceral laminae resembles a similar structure in some *Mecoloesthus* and *Coryssocnemis* species (figs. 1001, 1018). Otherwise, both genitalic and nongenitalic characters are highly autapomorphic, providing no clues on possible relatives.

DISTRIBUTION: Known only from type locality in eastern Venezuela.

Kaliana yuruani, new species

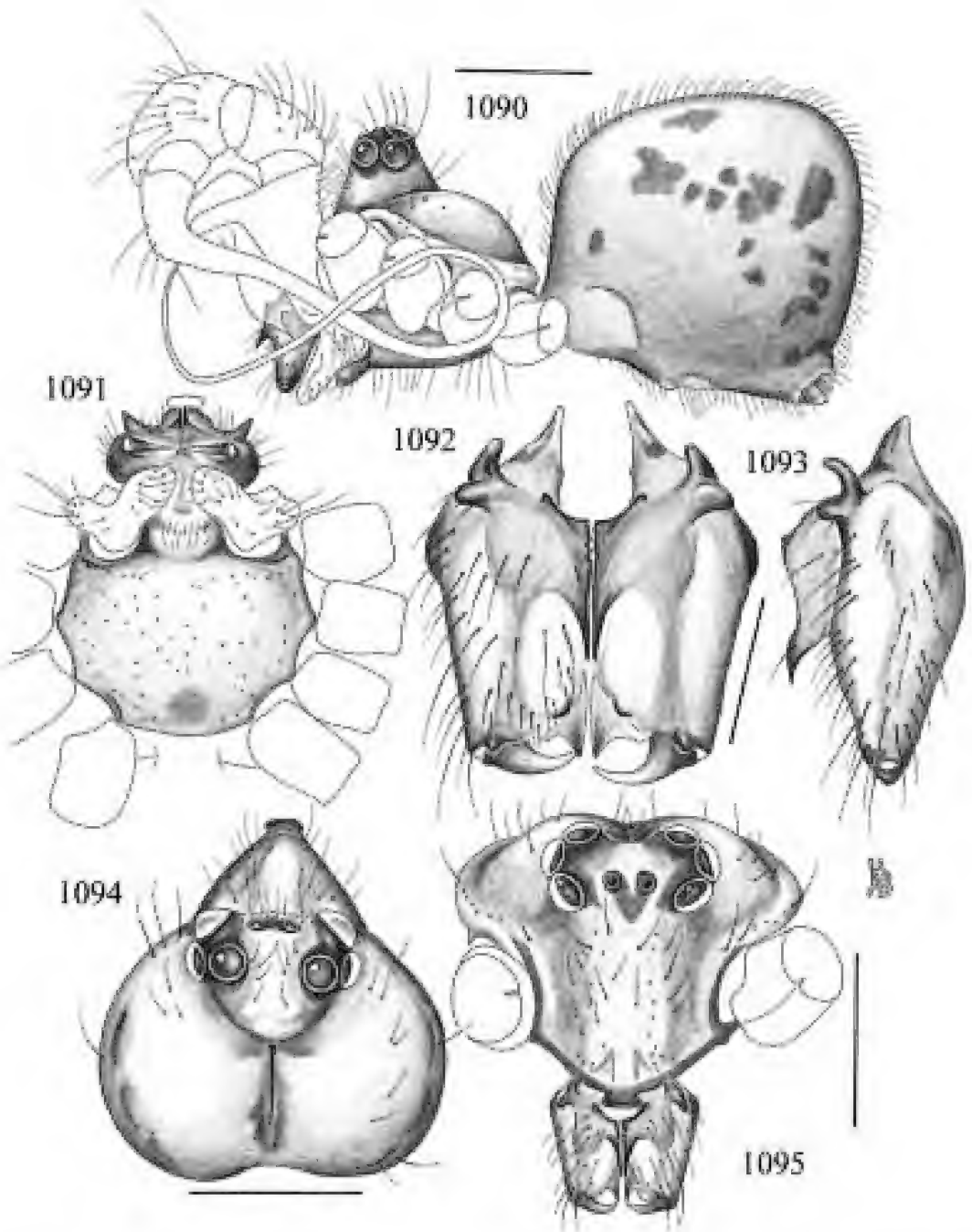
Figures 1090–1100

TYPE: Male holotype from 26 km N Rio Yuruani, La Gran Sabana, Bolívar, Venezuela; "forest grassland edge," malaise, June 29–Aug. 10, 1987 (S. & J. Peck), in AMNH.

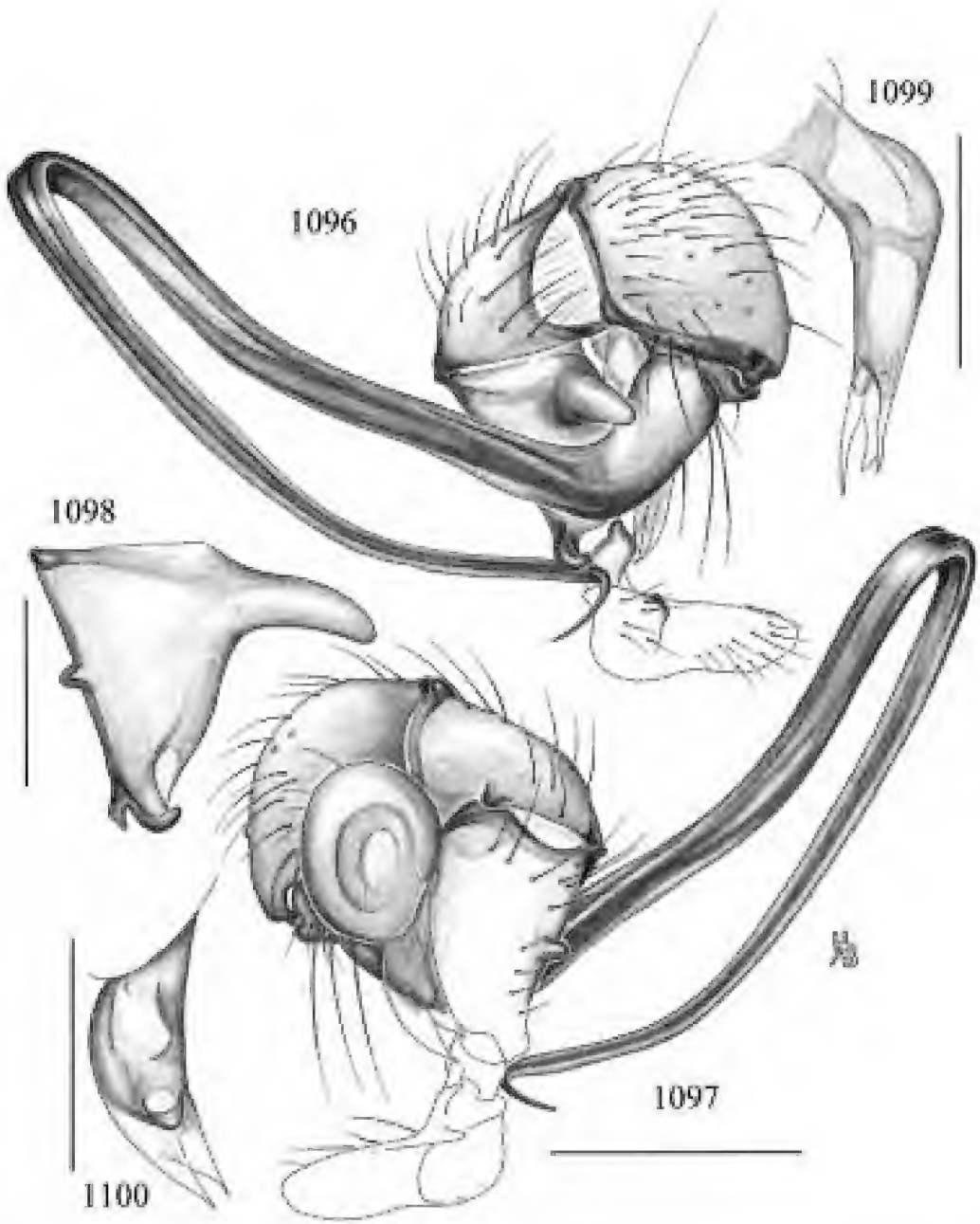
ETYMOLOGY: Named for the Yuruani River close to the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Small pholcid (total length ~ 2 mm) with eight eyes, relatively long legs, roughly globular opisthosoma; easily distinguished from any known pholcid by the extremely long procursus (figs. 1096–1097), the long apophysis ventrally on the palpal femur (fig. 1098), the high eye turret with triads far apart (figs. 1090, 1095), the modified male clypeus (fig. 1095), and the armature of the male chelicerae (figs. 1092–1093).

MALE (holotype): Total length 1.9, carapace width 1.0; leg 1: 23.1 (5.5+0.3+5.6 +10.0+1.7), tibia 2: 3.5, tibia 3: 2.5, tibia 4: 3.5; tibia 1 l/d: 76. Habitus as in fig. 1090. Carapace with deep thoracic groove, ochre-yellow, slightly darker spot medially (fig. 1094), ocular area elevated, eight eyes separated into two lateral triads, and AME isolated in front (fig. 1095); distance PME-ALE about 50% of PME diameter. Clypeus tapering in front, with sclerotized knob at tip (figs. 1094–1095). Sternum wide (fig. 1091). Chelicerae ochre-yellow with dark brown to black apophyses proximally (figs. 1092–1093). Palps as in figs. 1096–1097, ochre-yellow proximally, distally brown to black (procursus); coxa with distinct retrolateral apophysis, femur with small dorsal protrusion and conspicuous ventrolateral apophysis (fig. 1098), procursus structurally simple but extremely long (figs. 1096–1097), bulb simple with embolar division ending in two transparent laminae (figs. 1099–1100). Legs



Figs. 1090–1095. *Kaliana yuruani*, n. sp., male holotype. **1090**. Habitus, lateral view. **1091**. Prosoma, ventral view. **1092–1093**. Chelicerae, frontal and lateral views. **1094–1095**. Prosoma, dorsal and frontal views. Scale lines: 0.5 mm (1090–1091, 1094–1095), 0.2 mm (1092–1093).



Figs. 1096–1100. *Kaliana yuruani*, n. sp., male holotype. **1096**. Right palp, retrolateral view. **1097**. Right palp, prolateral view. **1098**. Right palpal femur, retrolateral view. **1099–1100**. Embolar division of right bulb, ~ ventral (1099) and prolateral (1100) views. Scale lines: 0.5 mm (1096–1097), 0.3 mm (1098–1100).

light brown, with indistinct darker rings on femora (distally) and tibiae (proximally); without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 5%. Opisthosoma pale greenish-gray with some darker greenish spots dorsally (fig. 1090).

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: VENEZUELA: *Bolívar*: 26 km N Rio Yuruani, La Gran Sabana: type above.

WAUNANA, NEW GENUS

TYPE SPECIES: *Blechroscelis modesta* Banks, 1929.

ETYMOLOGY: The generic name honors the Waunana Indians, a tropical forest tribe living in the Colombian Chocó and Panamanian Darién. Gender feminine.

DIAGNOSIS: Medium-sized (total length 1.6–2.7 mm), rather light, eight-eyed pholcids with relatively long legs, longer-than-high opisthosoma; distinguished from similar genera (*Modisimus*, *Pisaboa*) by the combination of anterior humps on male sternum, apophyses on male chelicerae, pointed and upward-projecting (''pup'') apophysis on male palpal femur, eight eyes on moderately elevated ocular area, and many vertical hairs on femora and tibiae of male legs.

DESCRIPTION: Total length ~ 1.6–2.7 mm. Carapace with distinct thoracic groove, ocular area moderately elevated, with eight eyes, AME smallest; distance PME-ALE relatively large (80–100% of PME diameter). Sternum with humps (absent in *W. eberhardi*, n. sp.). Male clypeus unmodified. Basal segment of male chelicerae with pair of simple apophyses (more prominent in *W. tulcan*, n. sp.); without stridulatory ridges laterally; fangs unmodified. Male palpal coxa with retrolateral apophysis, femur with prominent retrolateral apophysis proximally and ''pup'' apophysis distally (missing in *W. tulcan*); procursus long and thin, with simple tip. Tarsal organ exposed (examined: *W. modesta*). Legs relatively long (leg 1 about 9–13 × body length; tibia 1 l/d usually 75–85; only 56 in *W. tulcan*); leg formula 1243; legs without spines and curved hairs; with many vertical hairs on femora and tibiae (not in *W. tulcan*); retrolateral trichobothrium of tibia 1 very proximal (at 3–4%); tarsus 1 with ~ 20–30 pseudosegments. Opisthosoma longer than high, pointed at spinnerets. Male gonopore without epiandrous spigots (examined: *W. modesta*). ALS with only one piriform gland spigot each (examined: *W. modesta*), other spinnerets typical for family.

Female only known in type species; sexual dimorphism slight. Epigynum and stridulation see *W. modesta* description below.

MONOPHYLY: The species included do not share a clear synapomorphy, but rather show general and specific similarities (habitus and pale coloration; simple, spinelike procursus; one pair of apophyses on male chelicerae; many vertical hairs on male femora and tibiae), could not convincingly be placed into another genus, and occur in a restricted geographic region. The unique stridulatory apparatus in *W. modesta* females might be a synapomorphy, but in no other species is the female known.

GENERIC RELATIONSHIPS: *Waunana* shares the high concentration of vertical hairs on male femora with *Modisimus*, a largely Central American genus, but it lacks the high eye turret of typical *Modisimus*. Several other genera share the many vertical hairs on the tibiae; of these, *Pomboa* and *Pisaboa* appear similar to *Waunana*, and *Pisaboa* also shares the ''pup'' apophysis on the male palpal femur.

SPECIFIC RELATIONSHIPS: *W. anchicaya*, n. sp., is very close to *W. modesta* (identical male chelicerae, minimal differences in the procursus); *W. eberhardi* shares with these species the many vertical hairs on femora and tibiae; *W. tulcan* is quite different (no vertical hairs, no ''pup'' apophysis) and therefore assigned tentatively.

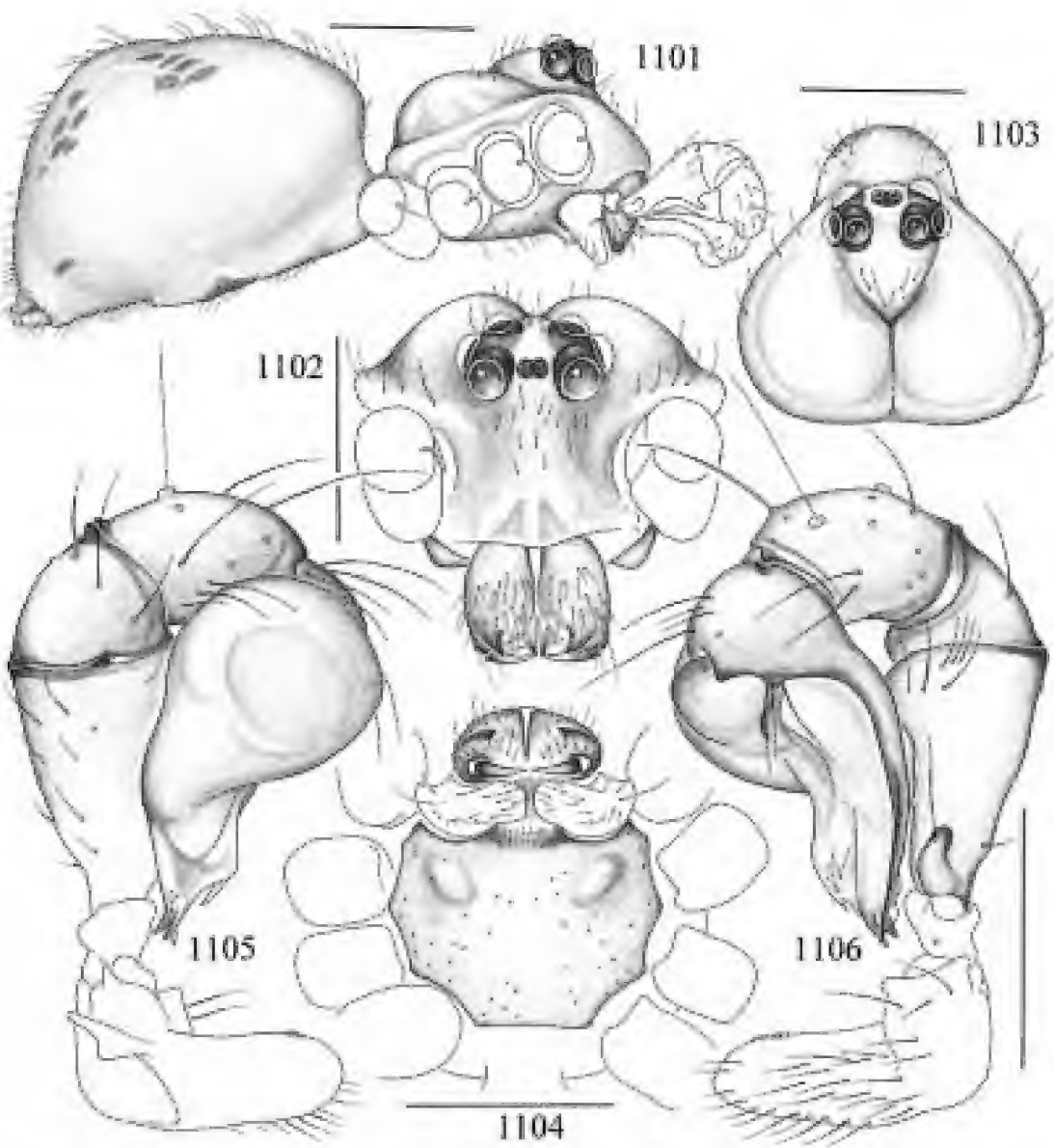
DISTRIBUTION/COMPOSITION: Four described species from Panama, Colombia and Ecuador east of the Andes. *W. tulcan* is the only species from high in the Andes (2400 m elev.), but this species is also tentatively assigned for other reasons (see above).

Waunana modesta (Banks, 1929), new combination

Figures 199, 1101–1114

Blechroscelis modesta Banks, 1929: 57, figs. 24, 39, 41, 80.

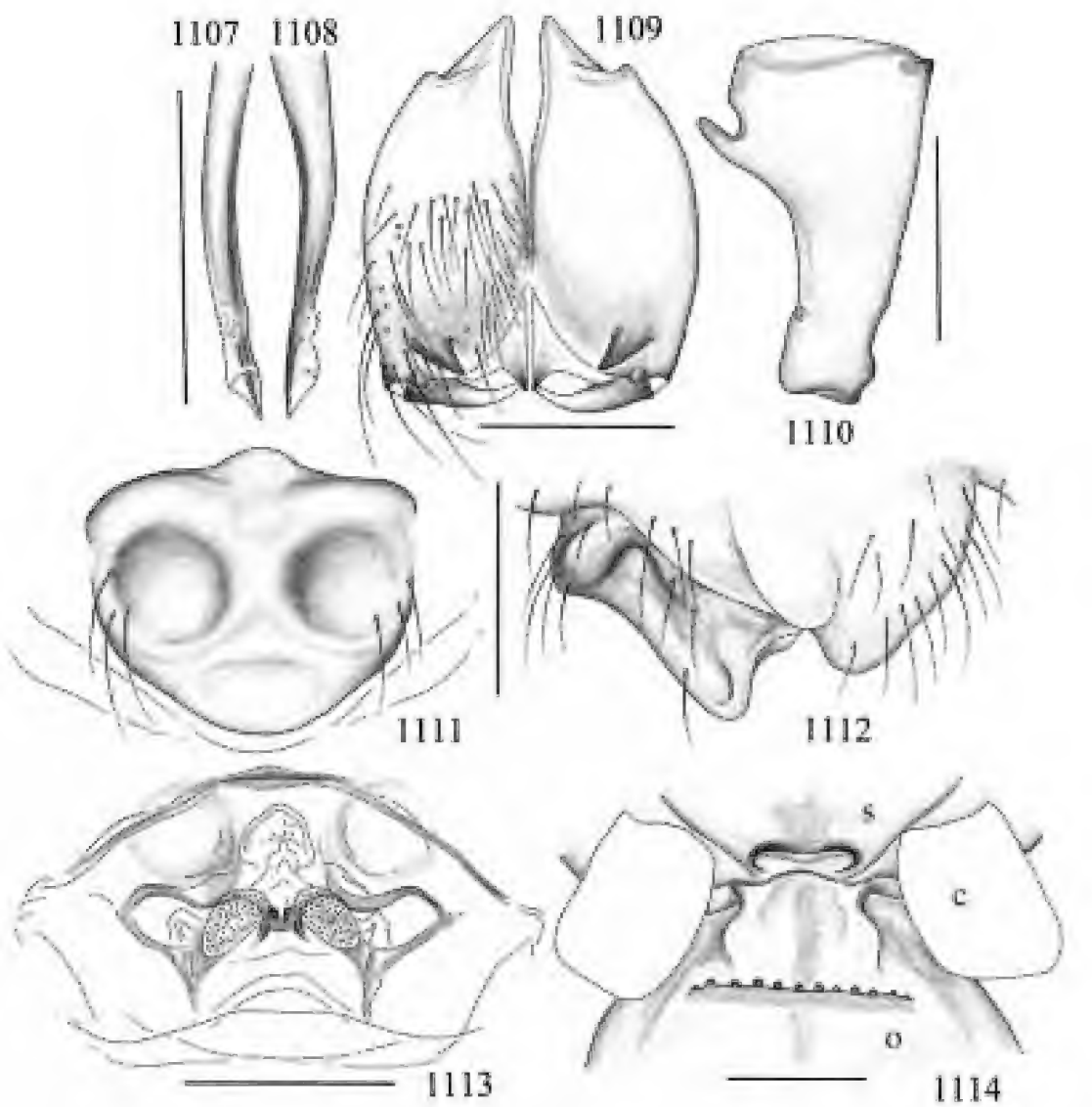
TYPES: Two male and one female syntypes from Barro Colorado, Canal Zone, Panama; June 20–24 and July 13, 1924 (N. Banks) and Ft. Davis, July 3, 1924 (N. Banks), in MCZ (examined).



Figs. 1101–1106. *Waunana modesta* (Banks), male. **1101**. Habitus, lateral view. **1102–1104**. Prosoma, frontal, dorsal, and ventral views. **1105**. Left palp, prolateral view. **1106**. Left palp, retrolateral view. Scale lines: 0.5 mm (1101–1104), 0.3 mm (1105–1106).

DIAGNOSIS: Distinguished from close relatives (*W. anchicaya*, *eberhardi*) by the curved slender procursus (figs. 1106–1108), and the bipartite bulbal apophysis (figs. 1105–1106).

MALE (syntype from Ft. Davis): Total length 2.1, carapace width 0.9; leg 1: (6.6+0.4+6.7, metatarsus and tarsus missing), tibia 2: 4.0, tibia 3: 2.8, tibia 4: 3.5; tibia 1 l/d: 75. Habitus as in fig. 1101; prosoma ochre-yellow, with deep thoracic groove and moderately elevated ocular area with eight eyes (figs. 1101–1103); distance PME-ALE about 80% of PME diameter. Sternum with pair of anterior humps (figs. 1102, 1104); chelicerae with pair of frontal



Figs. 1107–1114. *Waunana modesta* (Banks). **1107–1108**. Left procursus tip, ventral (1107) and retrolateral (1108) views. **1109**. Male chelicerae, frontal view. **1110**. Male left palpal femur, retrolateral view. **1111–1112**. Epigynum, ventral and lateral views. **1113**. Epigynum, dorsal view. **1114**. Stridulatory apparatus: row of knobs on opisthosoma against sclerotized arch on sternum (s: sternum; c: coxa 4; o: opisthosoma). Scale lines: 0.2 mm.

apophyses distally, directed inward (fig. 1109). Palps as in figs. 1105–1106, with distinct retrolateral coxal apophysis, femur with proximal bulge and distal ventral apophysis (fig. 1110), procursus slender and curved, with distal ventral lamina (figs. 1107–1108), bulb with bipartite distal apophysis. Legs ochre-yellow; femora and tibiae with many vertical hairs, without spines and curved hairs; retrolateral trichobothrium of tibia 1 at 4%; tarsus 1 (male from Barro Colorado) apparently with over 20 pseudosegments (very difficult to count). Opisthosoma pale greenish-gray, with faint dorsal marks (fig. 1101); gonopore without epiandrous spigots; ALS with only one piriform gland spigot each.

FEMALE (syntype): Total length 2.0; tibia 1: 3.8. General shape and colors as in male;

sternum without humps, femora and tibiae without vertical hairs. Unique stridulatory apparatus ventrally between prosoma and opisthosoma: sclerotized edge on prosoma against transverse band of about a dozen tiny cuticular knobs on opisthosoma (fig. 1114). Epigynum only slightly darker than opisthosoma, with pair of large pits (figs. 1111–1112; the "two circular openings" of Banks, 1929). Dorsal view as in fig. 1113.

VARIATION (Barro Colorado Island): Tibia 1 in another male: 6.1; tibia 1 in 10 females: 3.8–4.3 ($\bar{x}$ = 4.1).

DISTRIBUTION: Known only from Canal Zone, Panama.

MATERIAL EXAMINED: PANAMA: *Canal Zone*: Ft. Davis: syntype above; Barro Colorado: syntypes above; Barro Colorado Island, July–August 1939 (A. M. Chickering), several vials with males and females, in MCZ.

Waunana anchicaya, new species

Figures 1115–1121

TYPES: Male holotype, 1♂ paratype from "Cent. Anchicayá" (hydroelectric dam on Rio Anchicayá at ~ 400 m elev.), Dept. del Valle, Colombia; no date (W. G. Eberhard), in MCZ.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Close relative of *W. modesta*, distinguished by the straighter procursus and its tip (figs. 1116–1118), and the single apophysis on the bulb (fig. 1116).

MALE (holotype): Total length 2.7, carapace width 1.13; leg 1: 35.0 (8.0+0.5+8.4 +15.6+2.5), tibia 2: 5.2, tibia 3: 3.8, tibia 4: 4.7; tibia 1 l/d: 79. Prosoma shape and eye pattern as in *W. modesta* (cf. figs. 1102–1104); distance PME-ALE about 80% of PME diameter; humps on sternum very low, almost invisible; carapace, ocular area, clypeus, and palps ochre to light brown, with darker spot behind ocular area; sternum light ochre. Chelicerae light brown with black apophyses in same position as in *W. modesta* (cf. fig. 1109), but slightly smaller. Palps as in figs. 1115–1116, with distinct retrolateral apophysis on coxa, femur with proximal bulge and distal ventral apophysis, long thin procursus with distal ventral lamina (figs. 1117–1118), bulb tapering into single distal apophysis (fig. 1116). Legs light brown, without markings; femora and tibiae with many vertical hairs; without spines and curved hairs; retrolateral trichobothrium of tibia 1 at 4%; tarsus 1 with over 20 pseudosegments (quite distinct). Opisthosoma shape as in *W. modesta* (cf. fig. 1101), but slightly longer, ochre-gray, with hardly visible darker spots dorsally.

VARIATION: Tibia 2 in paratype: 4.7. Male from Ecuador (see below) with longer opisthosoma and minimally different procursus tip (figs. 1119–1121), assigned tentatively.

FEMALE: Unknown.

DISTRIBUTION: Known from Colombia, Dept. del Valle, and possibly Ecuador: Los Rios (see Variation).

MATERIAL EXAMINED: COLOMBIA: *Dept. del Valle*: types above. ECUADOR: *Los Rios*: km 56 Quevedo to Sto Domingo, Jan. 27, 1973 (V. Brach), 1♂ in MCZ, assigned tentatively.

Waunana eberhardi, new species

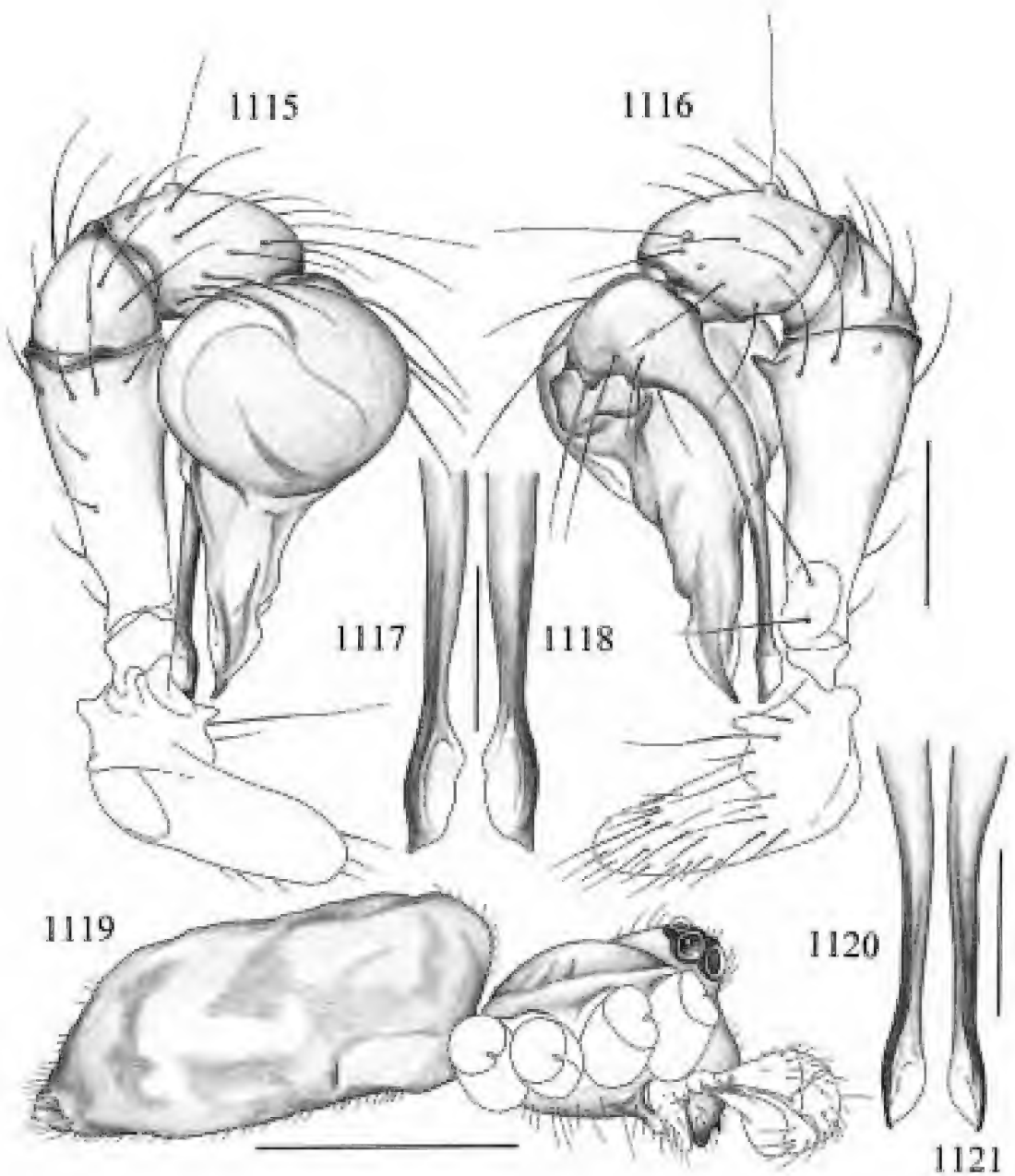
Figures 1122–1127

TYPE: Male holotype from "Cent. Anchicayá" (hydroelectric dam on Rio Anchicayá at ~ 400 m elev.), Dept. del Valle, Colombia; 1975 (W. G. Eberhard), in MCZ.

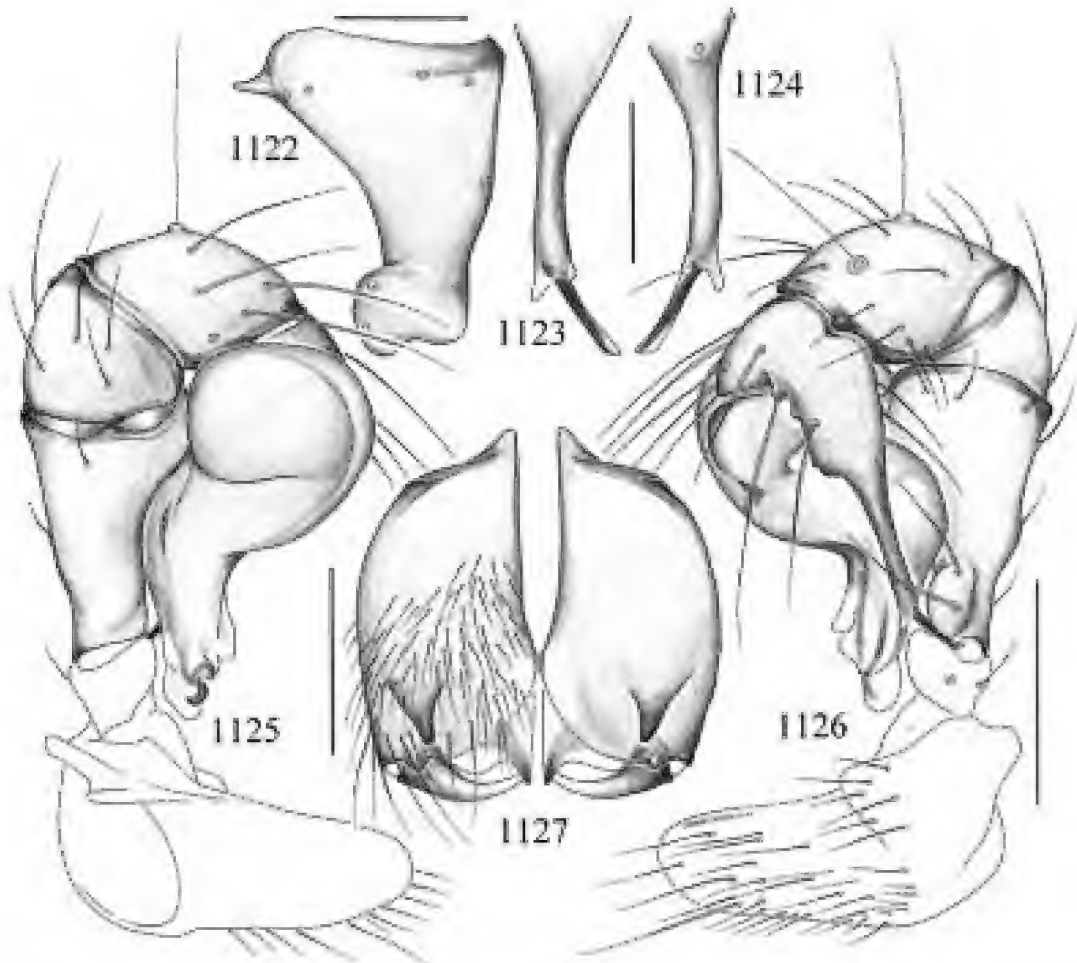
ETYMOLOGY: Named for the collector of the type material.

DIAGNOSIS: Close relative of *W. modesta* and *anchicaya*, distinguished by the procursus that suddenly narrows into a distal spine bent ventrally (figs. 1123–1124), the cheliceral apophyses that are less converging at their tips (fig. 1127), the palpal coxal apophysis that is more rounded (fig. 1126), and the distal femur apophysis that sits on a large bulge (fig. 1122).

MALE (holotype): Total length 2.5, carapace width 1.00; leg 1: 31.8 (7.6+0.5+7.6 +14.1+2.0), tibia 2: 4.3, tibia 3: 3.0, tibia 4: 3.9; tibia 1 l/d: 84. Prosoma shape and eyes as in *W. modesta* (cf. figs. 1102–1104; distance PME-ALE about 80% of PME diameter; sternum, however, without humps); entire prosoma pale orange-ochre, except brown Y mark dorsally; sternum orange; chelicerae with pair of frontal apophyses (fig. 1127). Palps as in figs. 1125–1126; with



Figs. 1115–1121. *Waunana anchicaya*, n. gen., n. sp., male. **1115**. Left palp, prolateral view. **1116**. Left palp, retrolateral view. **1117–1118**. Left procursus tip, retrolateral (1117) and prolateral (1118) views. **1119**. Male from Los Rios, Ecuador, lateral view. **1120–1121**. Left procursus tip of male from Los Rios, Ecuador, retrolateral (1120) and prolateral (1121) views. Scale lines: 1.0 mm (1119), 0.2 mm (1115–1116), 0.1 mm (1117–1118, 1120–1121).



Figs. 1122–1127. *Waunana eberhardi*, n. gen., n. sp., male. **1122**. Left palpal femur, retrolateral view. **1123–1124**. Left procursus, retrolateral (1123) and prolateral (1124) views. **1125**. Left palp, prolateral view. **1126**. Left palp, retrolateral view. **1127**. Chelicerae, frontal view. Scale lines: 0.2 mm (1125–1127), 0.1 mm (1122–1124).

rounded retrolateral apophysis on coxa, femur with proximal bulge and distal ventral apophysis (fig. 1122); procursus simple dark rod that bifurcates distally into short translucent dorsal projection and ventrally bent black spine (figs. 1123–1124). Legs orange-ochre, tips of femora and tibiae slightly lighter; hairs on legs as in *W. modesta* and *anchicaya*; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 with ~ 30 quite distinct pseudosegments. Opisthosoma shape as in *W. modesta* (cf. fig. 1101), but slightly longer, pale ochre-gray, genital plate slightly brownish.

VARIATION: Tibia 1 in male from Nariño: 7.9.

FEMALE: Unknown.

DISTRIBUTION: Known only from western Colombia (Dept. del Valle, Nariño).

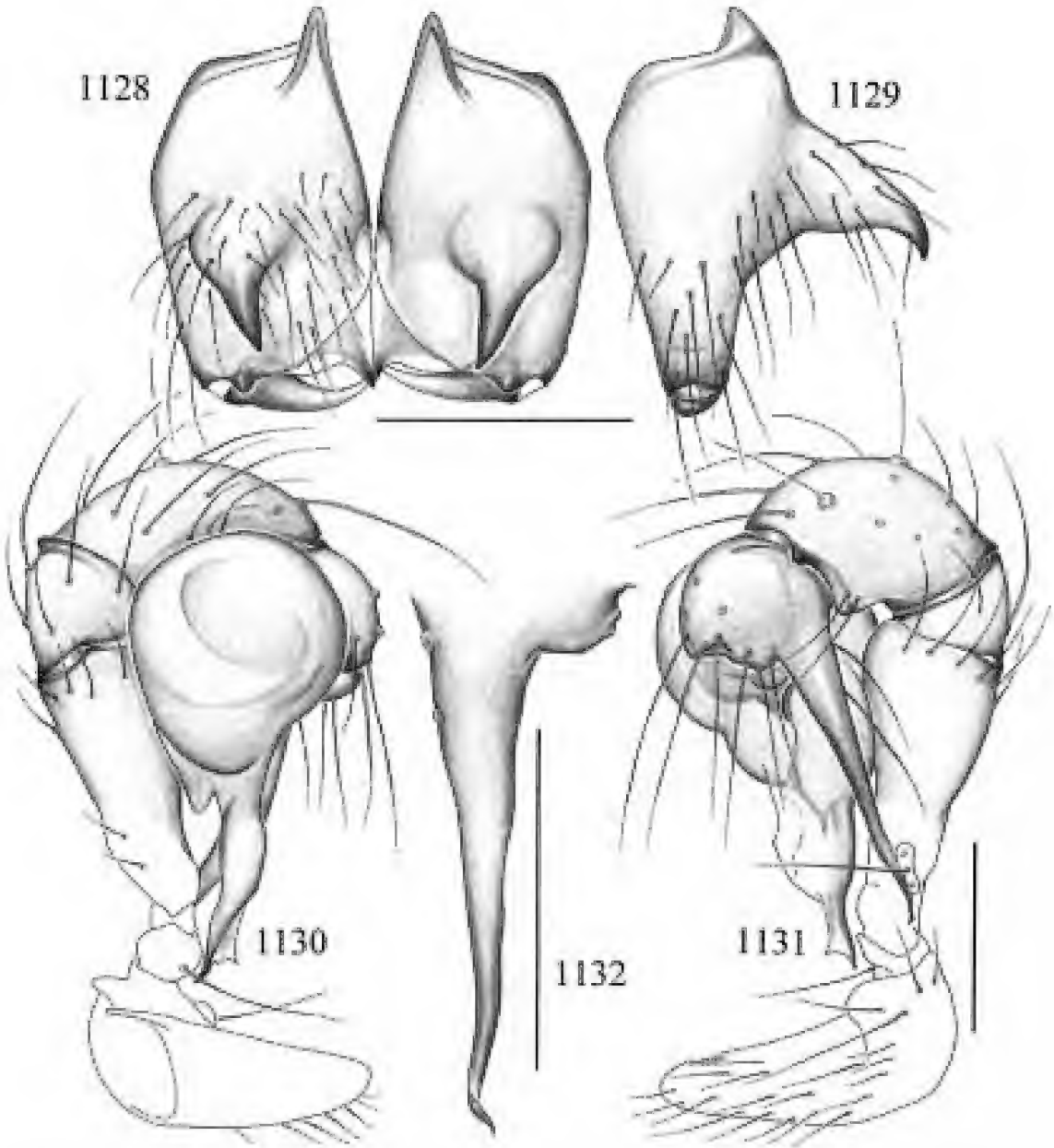
MATERIAL EXAMINED: COLOMBIA: *Dept. del Valle*: type above; *Nariño*: Barbacoas, 20 m elev., Mar. 20, 1974 (W. G. Eberhard), 1♂ in MCZ.

Waunana tulcan, new species

Figures 1128–1132

TYPE: Male holotype from El Angel (Tulcán), Dept. Carchi, Ecuador; 2700 m elev., June 24, 1965 (L. Peña), in MCZ.

NOTE: This species is tentatively assigned



Figs. 1128–1132. *Waunana tulcan*, n. gen., n. sp., male. **1128–1129**. Chelicerae, frontal and lateral views. **1130**. Left palp, prolateral view. **1131**. Left palp, retrolateral view. **1132**. Left procursus, prolateral view. Scale lines: 0.2 mm.

to *Waunana* because of the similarities with *W. modesta* in terms of prosoma shape, presence of sternum humps, slender procursus, and because of the geographic origin. It differs, however, in the absence of vertical hairs on legs, and the absence of a ventrodistal apophysis on the palpal femur.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from congeners by the large male cheliceral apophyses (figs. 1128–1129), the absence of an apophysis on the male palpal femur and the absence of vertical hairs on the femora and tibiae of all legs.

MALE (holotype): Total length 1.6, carapace width 0.8; leg 1: 15.1 (3.6+0.3+3.7 +6.0+1.5), tibia 2 missing, tibia 3: 1.7, tibia 4: 2.0; tibia 1 l/d: 56. Prosoma as in *W. modesta* (cf. figs. 1102–1104), but distance PME-ALE about 100% of PME diameter; carapace ochre-yellow, darker medially and around ocular area, ocular area with brown median band, clypeus with broad light brown band medially; sternum pale ochre-yellow with pair of distinct anterior humps (cf. figs. 1102, 1104). Chelicerae (figs. 1128–1129) ochre-yellow, only tips of long apophyses brown. Palps as in figs. 1130–1131, retrolateral coxal apophysis distinct but rounded, femur with long proximal protrusion, without distal ventral apophysis, procursus long and slender (fig. 1132), bulb with single, spine-like apophysis distally (figs. 1130–1131). Legs pale ochre-yellow, with hardly visible darker rings on femora and tibiae (distally), without spines, without curved and vertical hairs; tarsus 1 with over 20 pseudosegments (difficult to count). Opisthosoma slightly shrunken, but apparently more globular than in *W. modesta* (cf. fig. 1101), pale ochre-gray, with large blackish spots dorsally.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: ECUADOR: *Carchi*: El Angel: type above.

PISABOA, NEW GENUS

TYPE SPECIES: *Pisaboa silvae*, new species.

ETYMOLOGY: The generic name honors the Pisabo Indians, a tropical forest people in the Peruvian and Brazilian Amazon, who number approximately 100 people.

DIAGNOSIS: Medium-sized (total length 1.8–2.7), rather dark, eight-eyed pholcids; distinguished from other genera by the articulated apophyses on the male chelicerae (figs. 13, 1148, 1155; except *P. estrecha*, n. sp.: fig. 1140), the long procursus, the distinctively shaped ventral apophysis on the male palpal femur (figs. 1136, 1146), and the arched pore plates in the female internal genitalia (figs. 1138, 1142, 1150).

DESCRIPTION: Total length ~ 1.8–2.7 mm. Carapace with deep thoracic groove, ocular area moderately elevated, with eight eyes, AME smallest; distance PME-ALE about 50–70% of PME diameter. Male clypeus unmodified. Male chelicerae with pair of distinctive apophyses that appear to be articulated (= extremely modified hairs?), without stridulatory ridges laterally. Male sternum with very low humps in *P. laldea*, n. sp. (other species without humps). Male palpal coxa with rounded retrolateral apophysis, femur proximally with retrolateral apophysis, distally enlarged with distinct ventral apophysis; procursus very long; bulb simple, with distal spine. Tarsal organ exposed (examined: *P. silvae*: fig. 95). Legs relatively long (leg 1 about 8 × body length; tibia 1 l/d about 43–63), leg formula 1243 (leg 2 only slightly longer than leg 4); legs in males usually without dark rings; without spines and curved hairs, with many vertical hairs on all tibiae; retrolateral trichobothrium of tibia 1 proximal (at ~ 6–7%); tarsus with ~ 16–22 pseudosegments. Opisthosoma oval, tapering into spinnerets (fig. 1151). Male gonopore without epiandrous spigots (examined: *P. silvae*: fig. 130). ALS with only one piriform gland spigot each (examined: *P. silvae*: fig. 181), other spinnerets typical for family.

Sexual dimorphism slight; legs of females with distinct dark rings on femora and tibiae (subdistally); epigynum with pair of pockets or light areas, internally with very characteristic arched pore plates (figs. 1138, 1142, 1150), and membranous receptacle originating medially from valve area.

MONOPHYLY: The four species included share the arched pore plates and membranous receptacle in the female internal genitalia, the articulated apophyses on the male chelicerae, and the long procursus.

GENERIC RELATIONSHIPS: The ventral apophysis on the palpal femur and the many vertical hairs on the male tibiae are shared by *Waunana*. However, a similar femur apophysis is shared by several Central American genera and *Tupigea* and some species tentatively placed in *Mecoloesthus*. On the other hand, a similar membranous sac in the female internal genitalia (not included in the cladistic analysis) is shared by the type species of *Pomboa*. Whatever the sister group, *Pisaboa* is clearly part of the New World clade (thoracic groove, large distance PME-ALE, retrolateral coxal apophysis, epian-

drous spigots absent, ALS piriform gland spigots reduced to one, exposed tarsal organ).

DISTRIBUTION: Widely distributed in western South America from Bolivia to northwestern Venezuela.

COMPOSITION: The genus as construed here includes only the four species newly described below.

Pisaboa silvae, new species

Figures 13, 52, 58, 95, 130, 181, 1133–1139

TYPES: Male holotype, 18♂ 24♀ paratypes from Rio Samiria (4°43′S, 74°18′W), Dept. Loreto, Peru; May–June, 1990 (T. Erwin "et al."), fogging, in MUSM.

ETYMOLOGY: Named for Diana Silva who collected most of the Peruvian pholcids I have seen.

DIAGNOSIS: Distinguished from *P. laldea* and *estrecha* by the position and direction of the cheliceral apophyses (which in the present species are identical to *P. mapiri*, n. sp., cf. fig. 1148); from *P. laldea* and *mapiri* by the more slender procursus (figs. 1133–1135); from *P. estrecha* also by the wider epigynum (fig. 1139); from *P. mapiri* also by the absence of light spots laterally on the epigynum (fig. 1139).

MALE (holotype): Total length 2.1, carapace width 0.9; leg 1: 16.0 (4.0+0.3+3.7 +6.8+1.2), tibia 2: 2.5, tibia 3: 2.0, tibia 4: 2.4; tibia 1 l/d: 43. Habitus and prosoma shape as in *P. laldea* (cf. figs. 1151–1153); distance PME-ALE about 70% of PME diameter. Carapace ochre-yellow to light brown, with indistinct darker Y mark, clypeus with pair of darker stripes, sternum ochre-yellow, without anterior humps. Chelicerae indistinguishable from those of *P. mapiri* (cf. fig. 1148; see also fig. 13). Palps as in fig. 1137, with rounded retrolateral coxal apophysis; femur with subdistal apophysis ventrally (fig. 1136), procursus long, not conspicuously flattened (figs. 1133–1135); bulb simple, with distal spine (fig. 1137; see also figs. 52, 58). Tarsal organ exposed (fig. 95). Legs ochre-yellow, darker rings hardly visible, without spines and curved hairs, many vertical hairs on all tibiae; retrolateral trichobothrium of tibia 1 at 6%; tarsus 1 with ~ 16 pseudosegments. Opisthosoma shape as in *P. laldea* (cf. fig. 1151), dark gray with white spots among many indistinct dark spots, with light brown genital plate; gonopore without epiandrous spigots (fig. 130); ALS with only one piriform gland spigot each (fig. 181).

VARIATION: Tibia 1 in 14 male paratypes: 3.5–3.9 ($\bar{x}$ = 3.7). Some males have no white spots on the opisthosoma.

FEMALE (paratypes): Tibia 1 (N = 22) 2.5–2.8 ($\bar{x}$ = 2.6). In general similar to male, but with distinct dark brown rings proximally and subdistally on femora and tibiae, and proximally on metatarsi; each ring preceded and followed by whitish ring, which gives legs very vivid, annulated pattern; tibiae without vertical hairs. Sternum brown. Epigynum ochre, with pair of dark, lateral pockets, and frontally with greenish arch (fig. 1139); internally with long, arched pore plates and large transparent ventral sac originating from round median frontal structure (fig. 1138).

DISTRIBUTION: Widely distributed in lowland Peru (Loreto to Madre de Dios).

MATERIAL EXAMINED: PERU: *Loreto*: types above; same data as types: 2♂ in MUSM; same locality, May 30, 1990 (D. Silva), 1♀ 1 juvenile in MUSM; *Madre de Dios*: Zona Reservada Pakitza (11°56′S, 71°17′W), 356 m elev., May 2, 1991 (D. Silva), 1♀ in MUSM; same locality and collector, Apr. 24–May 6, 1991, 2♀ (2 vials) in USNM; Pakitza, Rio Manú, 250 m elev., Sept. 22, 1988 (T. Erwin & B. D. Farrel), 2♂ 1♀ (2 vials) in USNM.

Pisaboa estrecha, new species

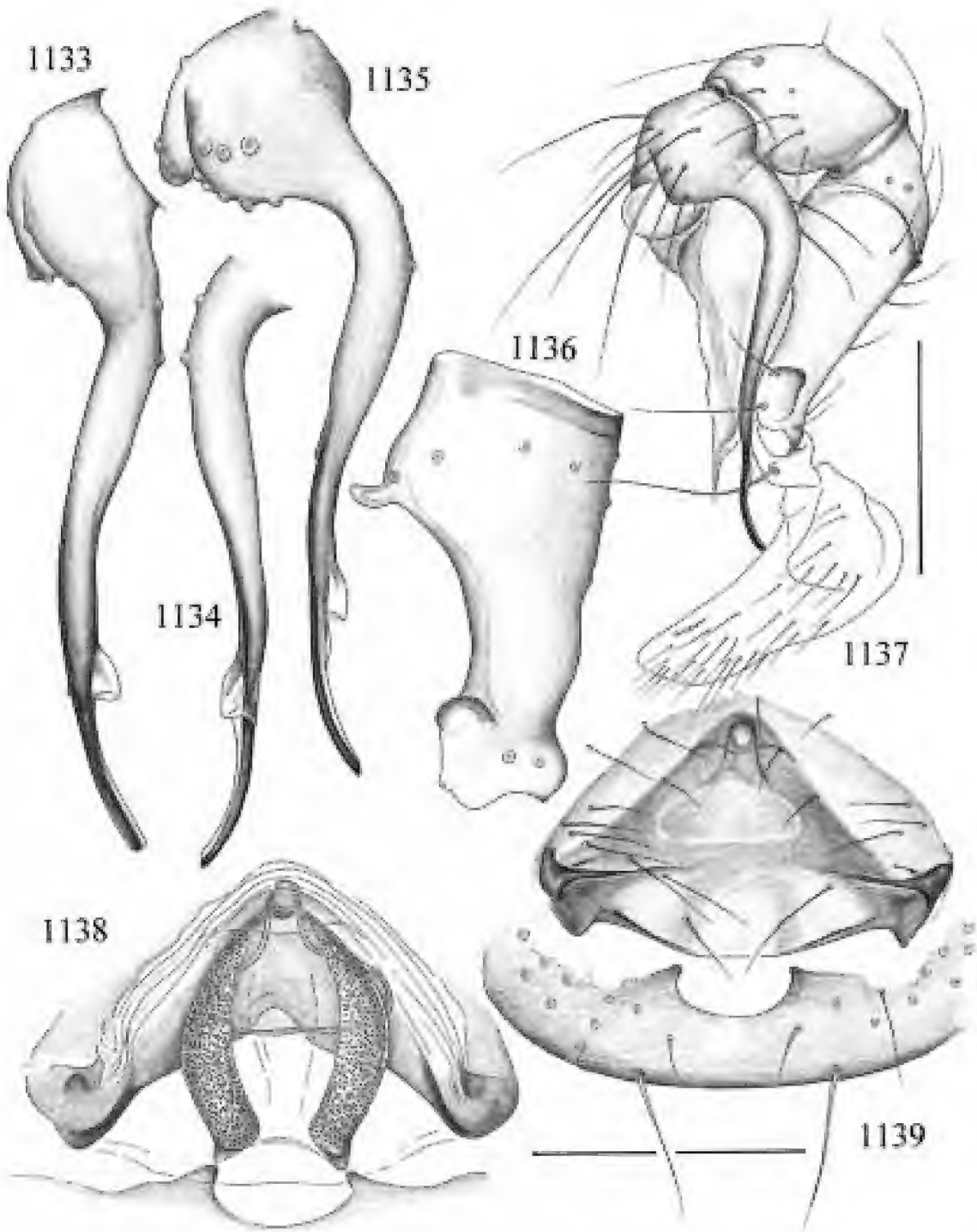
Figures 1140–1142

TYPES: Male holotype, 3♂ 5♀ paratypes from Rio Samiria (4°43′S, 74°18′W), Loreto, Peru; May–June, 1990 (T. Erwin "et al."), "fogging . . . and manual," in MUSM.

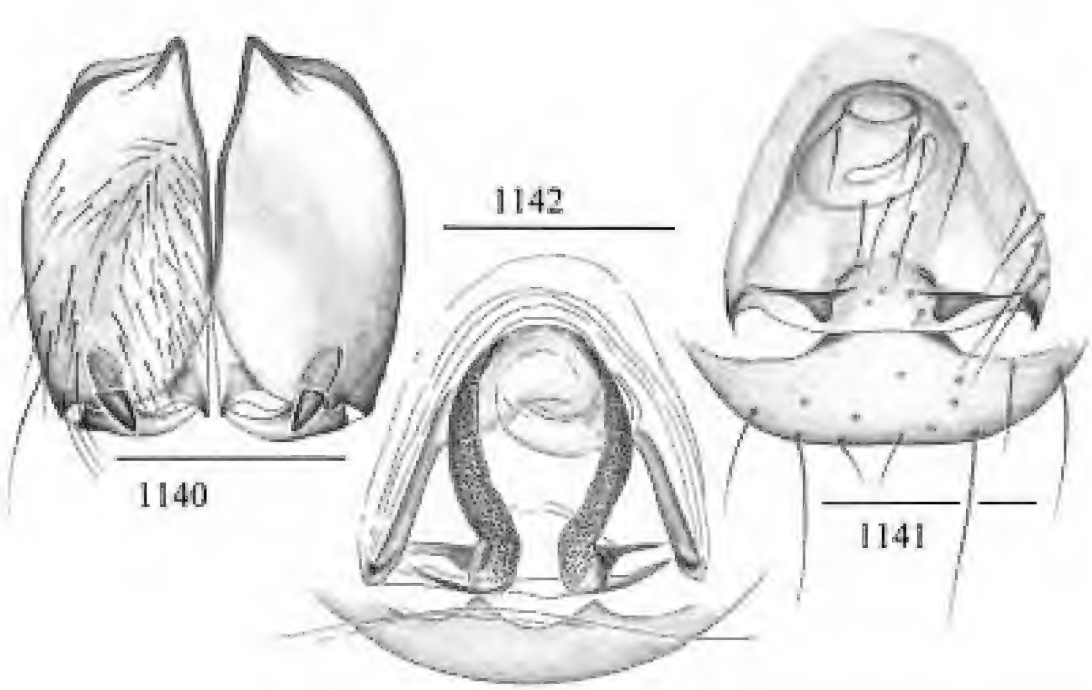
ETYMOLOGY: The specific name is an adjective referring to the comparatively narrow epigynum.

DIAGNOSIS: Close relative of *P. silvae*, distinguished by the converging cheliceral apophyses (fig. 1140), and by the much narrower epigynum (fig. 1141).

MALE (holotype): Total length 1.8, carapace width 0.74; leg 1: (4.4+0.3+4.6+8.5,



Figs. 1133–1139. *Pisaboa silvae*, n. gen., n. sp. **1133–1135**. Left procursus, retrolateroventral (1133), prolateral (1134), and retrolateral (1135) views. **1136**. Left palpal femur, retrolateral view. **1137**. Left palp, retrolateral view. **1138**. Epigynum, dorsal view. **1139**. Epigynum, ventral view. Scale lines: 0.3 mm (1137–1139).



Figs. 1140–1142. *Pisaboa estrecha*, n. gen., n. sp. **1140**. Male chelicerae, frontal view. **1141**. Epigynum, ventral view. **1142**. Epigynum, dorsal view. Scale lines: 0.2 mm.

tarsus missing), tibia 2: 2.6, tibia 3: 1.9, tibia 4 missing (tibia 2/4 in male paratype: 2.9/2.8); tibia 1 l/d: 63. Habitus and prosoma shape as in *P. laldea* (cf. figs. 1151–1153); distance PME-ALE about 50% of PME diameter. Carapace ochre-yellow to light brown, with indistinct darker Y mark, clypeus with pair of darker stripes, sternum ochre-yellow, without anterior humps. Chelicerae with pair of converging apophyses (fig. 1140; unlike the apophyses in other species of the genus, these apophyses do not seem to be articulated, but their actual mode of insertion is unclear). Palps not distinguishable from those of *P. silvae* (cf. figs. 1133–1137). Legs ochre-yellow, without rings, without spines and curved hairs, many vertical hairs on all tibiae; retrolateral trichobothrium of tibia 1 at 7%; tarsus 1 with ~ 20 pseudosegments. Opisthosoma shape as in *P. laldea* (cf. fig. 1151), monochromous light greenish-ochre, with light brown genital plate.

VARIATION: Tibia 1 in other males from Rio Samiria: 3.5, 4.1, 4.3, 4.9. The USNM has specimens from southern Peru (Madre de Dios; see below) that are very similar to the present material, but the procursus is slightly longer, and the epigynum slightly larger and minimally different in shape. This material is tentatively assigned to the present species.

FEMALE: Tibia 1 (N = 10): 2.9–3.4 ($\bar{x}$ = 3.2). In general similar to male, but with distinct dark brown rings subdistally on femora, proximally and subdistally on tibiae, and proximally on metatarsi (without whitish rings); sternum brown; tibiae without vertical hairs. Epigynum ochre, with pair of dark, lateral pockets (fig. 1141); internally with long, arched pore plates and large transparent ventral sac (not bifid) originating from round median frontal structure (fig. 1142; the sac is actually easier to see in ventral view: fig. 1141).

DISTRIBUTION: Widely distributed in lowland Peru (see Variation above).

MATERIAL EXAMINED: PERU: *Loreto*: types above; same data: 2♂ 2♀ (2 vials) in MUSM; May 1990, 3♀ in MUSM. *Huánuco*: Bosque Nacional Alexander von Humboldt, "El Caobal," July 31, 1986 (D. Silva), 1♂ 1♀ in MUSM. The following material is assigned tentatively: *Madre de Dios*: Zona Reservada Pakitza (11°56′S, 71°17′W), May 1–

6 and Oct. 1–9, 1991 (D. Silva), 2♂ 2♀ (4 vials) in USNM; Zona Reservada de Manú, Rio La Torre and Rio Tambopata (12°50′S, 69°17′W), Aug.–Dec. 1979 (A. Rypstra), 2♀ in USNM; Zona Reservada Tambopata, 30 km SW Puerto Maldonado (12°50′S, 69°17′W), 290 m elev., canopy fogging, Nov. 7–12, 1983 (T. Erwin "et al."), 2♀ in USNM.

Pisaboa mapiri, new species

Figures 1143–1150

TYPES: Male holotype, 1♀ paratype from Mapiri (N La Paz), Dept. La Paz, Bolivia; Aug. 11–17, 1989 (L. E. Peña), in AMNH.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Close relative of *P. silvae*, distinguished by the much broader procursus (figs. 1144–1146), and the light spots laterally on the epigynum (fig. 1149). Distinguished from *P. laldea* and *estrecha* by the lateral position of the apophyses on the male chelicerae (fig. 1148) and the shape of the procursus.

MALE (holotype): Total length 1.9, carapace width 0.8. All legs missing. Habitus and prosoma shape as in *P. laldea* (figs. 1151–1153); distance PME-ALE about 50% of PME diameter. Carapace ochre-yellow, darker medially, ocular area and clypeus also ochre-yellow; sternum with slightly darker median band, without anterior humps. Chelicerae with pair of strong apophyses situated in light area (fig. 1148; modified hairs?). Palps as in figs. 1143, 1146, with rounded retrolateral coxal apophysis, femur with ventral subdistal apophysis, procursus large, broad in retrolateroventral view (figs. 1144–1145), much thinner in retrolaterodorsal view, with black spine distally accompanied by ventral lamina, bulb with simple distal spine (fig. 1147). Opisthosoma shape as in *P. laldea* (cf. fig. 1151), pale greenish-ochre, without markings, with ochre-yellow genital plate.

FEMALE (paratype): Total length 2.2, carapace width 0.8; leg 1: 15.0 (3.8+0.3+3.7 +6.3+0.9), tibia 2: 2.2, tibia 3: 1.8 (leg 4 missing). In general similar to male; sternum dark brown, almost black, clypeus with pair of dark brown stripes running down from lateral eye triads. Legs with distinct dark rings on femora (subdistally) and tibiae (proximally and subdistally). Epigynum flat brown plate, with greenish arch frontally, apparently without lateral pockets (fig. 1149). Dorsal view as in fig. 1150, pore plates forming large arch; with transparent, bifid sac ventrally of uterus externus, originating medially from valve area.

DISTRIBUTION: Known from northern Bolivia (La Paz, Beni).

MATERIAL EXAMINED: BOLIVIA: *La Paz*: Mapiri: types above; *Beni*: 16.8 mi SW Yucumo (15°23′S, 66°59′W), ~ 500 m elev., Nov. 15–19, 1989 (J. Coddington, C. Griswold, D. Silva, S. Larcher, E. Peñaranda), 1♂ 1♀ (2 vials) in USNM.

Pisaboa laldea, new species

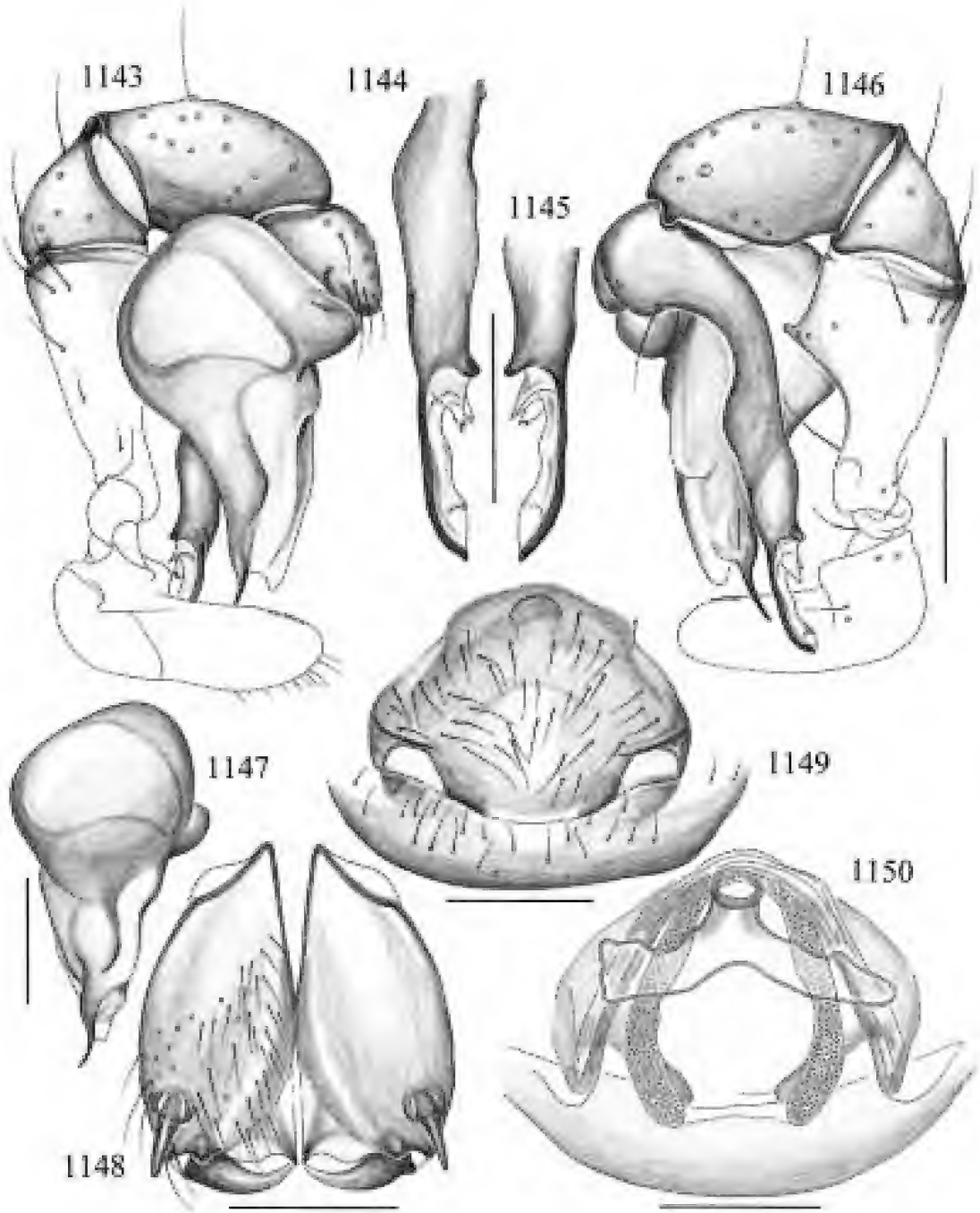
Figures 1151–1158

TYPE: Male holotype from rain forest at "Camp. Siberia," Laldea, 1200 m elev., Pregonero, Dept. Tachira, Venezuela; July 10–31, 1989 (S. & J. Peck), in AMNH.

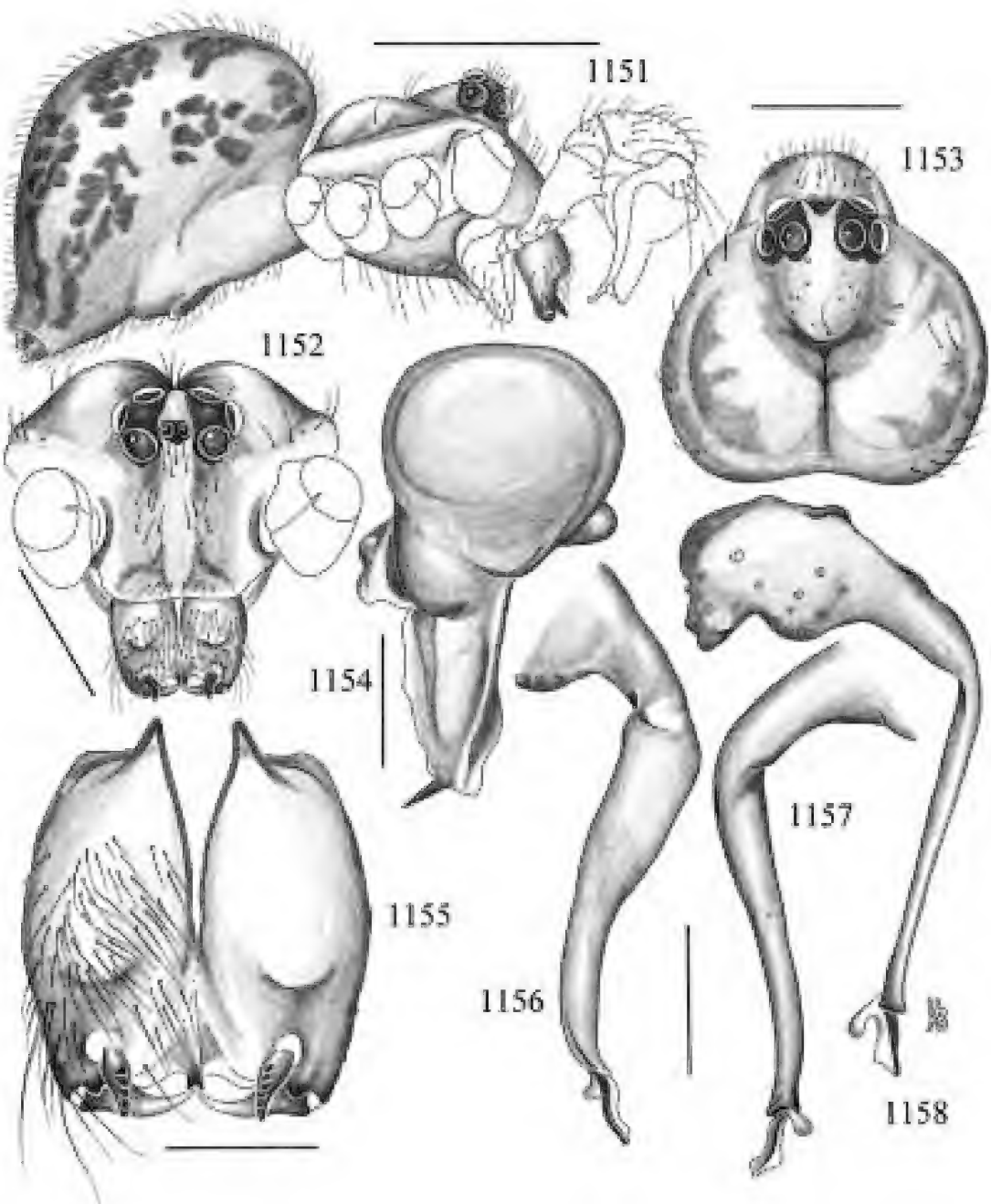
ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from congeners by the shape and position of the apophyses on the male chelicerae (fig. 1155), and the shape of the procursus (figs. 1156–1158).

MALE (holotype): Total length 2.7, carapace width 1.1; leg 1: 22.4 (4.9+0.4+5.4 +10.0+1.7), tibia 2: 3.2, tibia 3: 2.4, tibia 4: 3.0; tibia 1 l/d: 50. Habitus as in fig. 1151. Prosoma with deep thoracic groove, moderately elevated ocular area with eight eyes (figs. 1152–1153); distance PME-ALE about 60% of PME diameter. Carapace ochre-brown with darker brown markings medially and laterally, ocular area and clypeus brown, sternum ochre-brown with pair of very low humps anteriorly, chelicerae with proximal humps and distal frontal apophyses situated in light area (fig. 1155). Palps in general as in *P. mapiri* (cf. figs. 1143, 1146), but procursus of different shape (figs. 1156–1158), and bulb larger with oblique distal apophysis (fig. 1154). Legs ochre, with brown rings on femora (subdistally) and tibiae (proximally and subdistally); retrolateral trichobothrium of tibia 1 at 6%; tarsus 1 with ~ 22 pseudosegments. Opisthosoma as in fig. 1151,



Figs. 1143–1150. *Pisaboa mapiri*, n. gen., n. sp. **1143**. Left palp, prolateral view. **1144–1145**. Left procursus, retrolateral (1144) and prolateral (1145) views. **1146**. Left palp, retrolateral view. **1147**. Left genital bulb, ~ prolateral view. **1148**. Male chelicerae, frontal view. **1149**. Epigynum, ventral view. **1150**. Epigynum, dorsal view. Scale lines: 0.2 mm.



Figs. 1151–1158. *Pisaboa laldea*, n. gen., n. sp., male holotype. **1151**. Habitus, lateral view. **1152–1153**. Prosoma, frontal and dorsal views. **1154**. Left genital bulb, prolateral view. **1155**. Chelicerae, frontal view. **1156–1158**. Left procursus, retrolateroventral (1156), prolateral (slightly dorsal) (1157), and retrolateral (1158) views. Scale lines: 1.0 mm (1151), 0.5 mm (1152–1153), 0.2 mm (1154–1158).

dark greenish-gray with black spots dorsally and brown rectangular genital plate.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: VENEZUELA: *Tachira*: Pregonero: type above.

POMBOA, NEW GENUS

TYPE SPECIES: *Pomboa quindio*, new species.

ETYMOLOGY: The generic name honors the Colombian poet Rafael Pombo, loved by children for his "El Renacuájo Paseador" ("The Strolling Frog"). Gender feminine.

DIAGNOSIS: Medium-sized (total length 1.7–3.3) pholcids, extremely variable in habitus; distinguished from other genera by the procursus that is widely curved and dorsoproximally bears a cuticular spine accompanied by membranous fringes (figs. 1160, 1176; the cuticular spine is missing in *P. cali*, n. sp.).

DESCRIPTION: Total length ~ 1.7–3.3 mm. Carapace with distinct thoracic groove, ocular area moderately elevated, usually with eight eyes in very common position (fig. 1164), AME smallest (in *P. pallida*, n. sp., triads much farther apart and AME missing: fig. 1170); distance PME-ALE about 60–70% of PME diameter. Male clypeus unmodified. Male chelicerae often with modified hairs proximally (in type species proximal hairs just stronger than usual), usually with pair of simple apophyses distally (missing in *P. cali*), without stridulatory ridges laterally. Male sternum without humps. Male palpal coxa with retrolateral apophysis, femur characteristically "bottle-shaped" (fig. 1177), with retrolateral apophysis proximally; procursus widely curved, usually with dorsoproximal cuticular spine accompanied by membranous fringes (figs. 1160, 1176; missing in *P. cali*). Tarsal organ not examined. Legs of varying length (leg 1 about 6–17 × body length; tibia 1 l/d usually ~ 35–50; 90 in *P. pallida*), leg 1 longest, leg 2 longer than or as long as leg 4, leg 3 shortest; legs with dark rings at varying positions; without spines, with many vertical hairs on all tibiae (only in *P. cali* with curved hairs on tibiae and metatarsi); retrolateral trichobothrium of tibia 1 at ~ 3–8%; tarsus with ~ 20–30 pseudosegments. Opisthosoma oval. Male epigastric system and spinnerets not examined.

Sexual dimorphism slight; tibiae of females with few vertical hairs; epigynum very simple externally.

MONOPHYLY: *P. quindio* and *pallida* have almost identical pedipalps, including details of procursus and bulb, and the epigynum is almost identical externally. The additional fact that they come from the same department in Colombia leaves little doubt that they are in fact very closely related, despite the extremely different habitus. *P. cali* shares the habitus with *P. quindio*, and a number of further details with both other species (general palp shape, proximal modified hairs on male chelicerae, tibiae with many vertical hairs), and is from the same department in Colombia, too. It is therefore assigned to the genus despite some important differences (procursus without dorsal spine, male chelicerae without distal apophyses).

GENERIC RELATIONSHIPS: The membranous sac in the female internal genitalia of the type species *P. quindio* (fig. 1162) similar to that of *Pisaboa* (cf. figs. 1138, 1142, 1150). However, similar structures occur independently also in *Gertschiola* (figs. 349, 354) and *Litoporus* (fig. 1217). Vertical hairs in high density on the tibiae occur also in *Pisaboa* and *Waunana*. The close relationship with *Litoporus* suggested in the cladogram in appendix 2 is based on the large distance of the eye triads (char. 2), and is probably artificial. (Note that one of the two other most parsimonious trees found by NONA did not include this sister group relationship.)

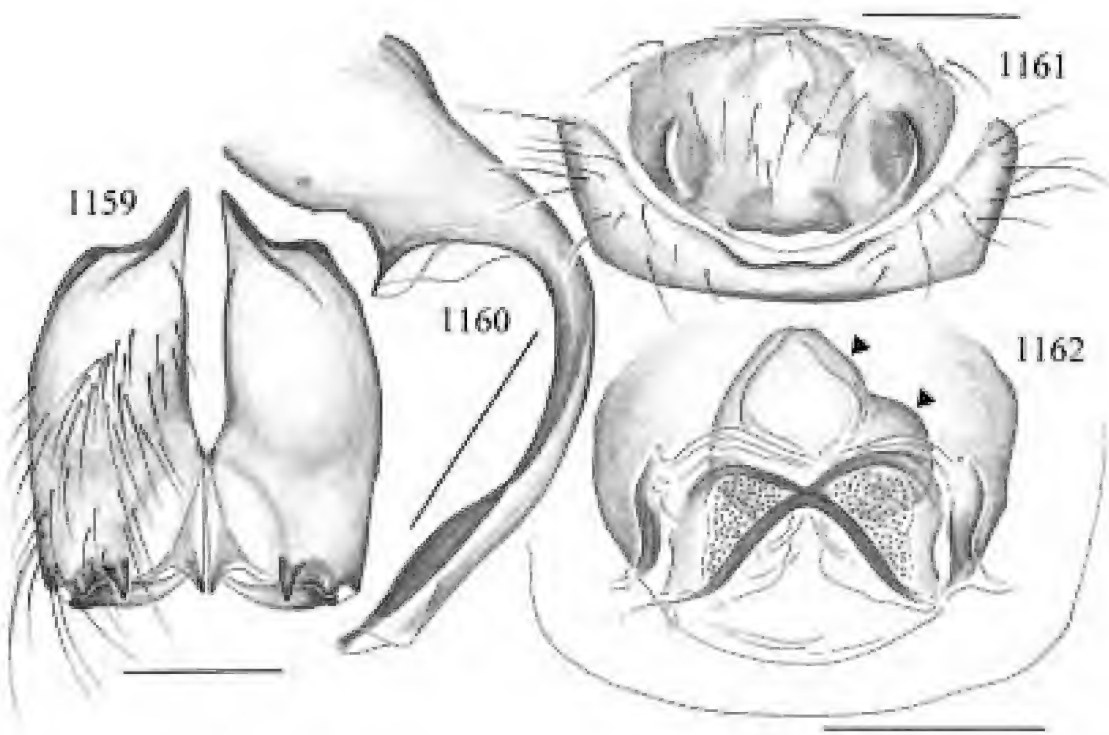
DISTRIBUTION: So far only known from the Departamento del Valle, Colombia.

COMPOSITION: At this point the genus includes only the three species newly described below. The MCZ has a fourth species, also from Dept. del Valle, which is very close to *P. quindio*, but has roundish instead of pointed apophyses on the chelicerae and differs in the shape of the dorsal spine and laminae on the procursus.

Pomboa quindio, new species

Figures 1159–1162

TYPES: Male holotype, 1♀ paratype from Quindio, 11 km E Calarca, Dept. del Valle,



Figs. 1159–1162. *Pomboa quindio*, n. gen., n. sp. **1159**. Male chelicerae, frontal view. **1160**. Left procursus, retrolateral view. **1161**. Epigynum, ventral view. **1162**. Epigynum, dorsal view (arrows point to membranous sac originating medially from valve area). Scale lines: 0.2 mm.

Colombia; 7000 ft elev., Mar. 7–11, 1974 (S. & J. Peck), in MCZ.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from *P. pallida* by the dark coloration, the shorter legs, and the presence of AME; from *P. cali* by the apophyses distally on the male chelicerae (fig. 1159), and the spine and lamellae dorsally on the procursus (fig. 1160).

MALE (holotype): Total length 2.6, carapace width 1.13; leg 1: 14.5 (3.3+0.4+3.6 +5.9+1.3), tibia 2: 2.3, tibia 3: 1.8, tibia 4: 2.3; tibia 1 l/d: 35. Habitus and prosoma as in *P. cali* (cf. figs. 1163–1164), with distinct thoracic groove, eight eyes on moderately elevated ocular area; distance PME-ALE about 65% of PME diameter. Carapace light brown, with darker margins and median band, ocular area slightly darker than carapace, sternum light brown, with three pairs of roundish lighter spots. Chelicerae light brown, with pair of pointed apophyses distally and low bulges with slightly stronger hairs proximally (fig. 1159). Palps light to dark brown, procursus blackish distally; general shape of palp as in *P. pallida* (cf. figs. 1171–1172), but spine and lamellae dorsally on procursus different (fig. 1160). Legs light brown, without rings; without spines and curved hairs, but with many vertical hairs on all tibiae; metatarsi 1 with very long hairs ventrally; retrolateral trichobothrium of tibia 1 at 8%; tarsus 1 with ~ 20 pseudosegments. Opisthosoma shape as in *P. cali* (cf. fig. 1163, but slightly rounder), greenish-gray with band of darker spots laterally.

FEMALE (paratype): Tibia 1: 2.8. In general very similar to male, but without vertical hairs on tibiae, without long hairs on metatarsi 1. Epigynum simple brown plate, darker laterally (fig. 1161), internally with relatively large pore plates and large membranous sac ventral of uterus externus (fig. 1162).

DISTRIBUTION: Known only from Dept. del Valle, Colombia.

MATERIAL EXAMINED: COLOMBIA: *Dept. del Valle*: Quindio: types above.

Pomboa cali, new species

Figures 1163–1167

TYPE: Male holotype from Cali, Dept. del Valle, Colombia; 1000 m elev., 1976 (W. G. Eberhard), in MCZ.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from congeners by the absence of distal apophyses on the male chelicerae (fig. 1167) and the absence of a dorsal spine on the procursus.

MALE (holotype): Total length 3.3, carapace width 1.7; leg 1: 31.2 (7.6+0.7+8.1 +12.5+2.3), tibia 2: 5.0, tibia 3: 4.1, tibia 4: 4.7; tibia 1 l/d: 50. Habitus and prosoma as in figs. 1163–1164; deep thoracic groove, eight eyes on moderately elevated ocular area; distance PME-ALE about 70% of PME diameter. Sternum wider than long, without anterior humps. Carapace light brown with distinct dark brown lateral and median bands (fig. 1164), ocular area dark brown, clypeus brown, sternum laterally light brown, medially darker brown. Chelicerae brown, with pair of proximal humps that carry some thickened and shorter hairs (fig. 1167). Palps as in figs. 1165–1166; brown, procursus tip black; retrolateral coxal apophysis round, indistinct, femur with proximal retrolateral hump, widened distally (fig. 1166), bulb S-shaped, procursus first directed retrolaterally and then curving back toward palpal trochanter (figs. 1165–1166). Legs brown, with slightly darker rings on femora (subdistally) and tibiae (proximally and subdistally), with many vertical hairs on tibiae only, curved hairs on tibiae and metatarsi, without spines; retrolateral trichobothrium of tibia 1 at 4%; tarsus 1 with ~ 25 pseudosegments. Opisthosoma greenish-ochre, with dark spots dorsally (fig. 1163).

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: COLOMBIA: *Dept. del Valle*: Cali: type above.

Pomboa pallida, new species

Figures 1168–1180

TYPES: Male holotype, 1♂ paratype from near Yotoco, Dept. del Valle, Colombia; 1600 m elev., "I.D. # 1119," Dec. 1976 (W. G. Eberhard), in MCZ.

ETYMOLOGY: The specific name is an adjective referring to the pale color of this species in comparison to the known congeners.

DIAGNOSIS: Easily distinguished from congeners by the pale coloration and the absence of the AME.

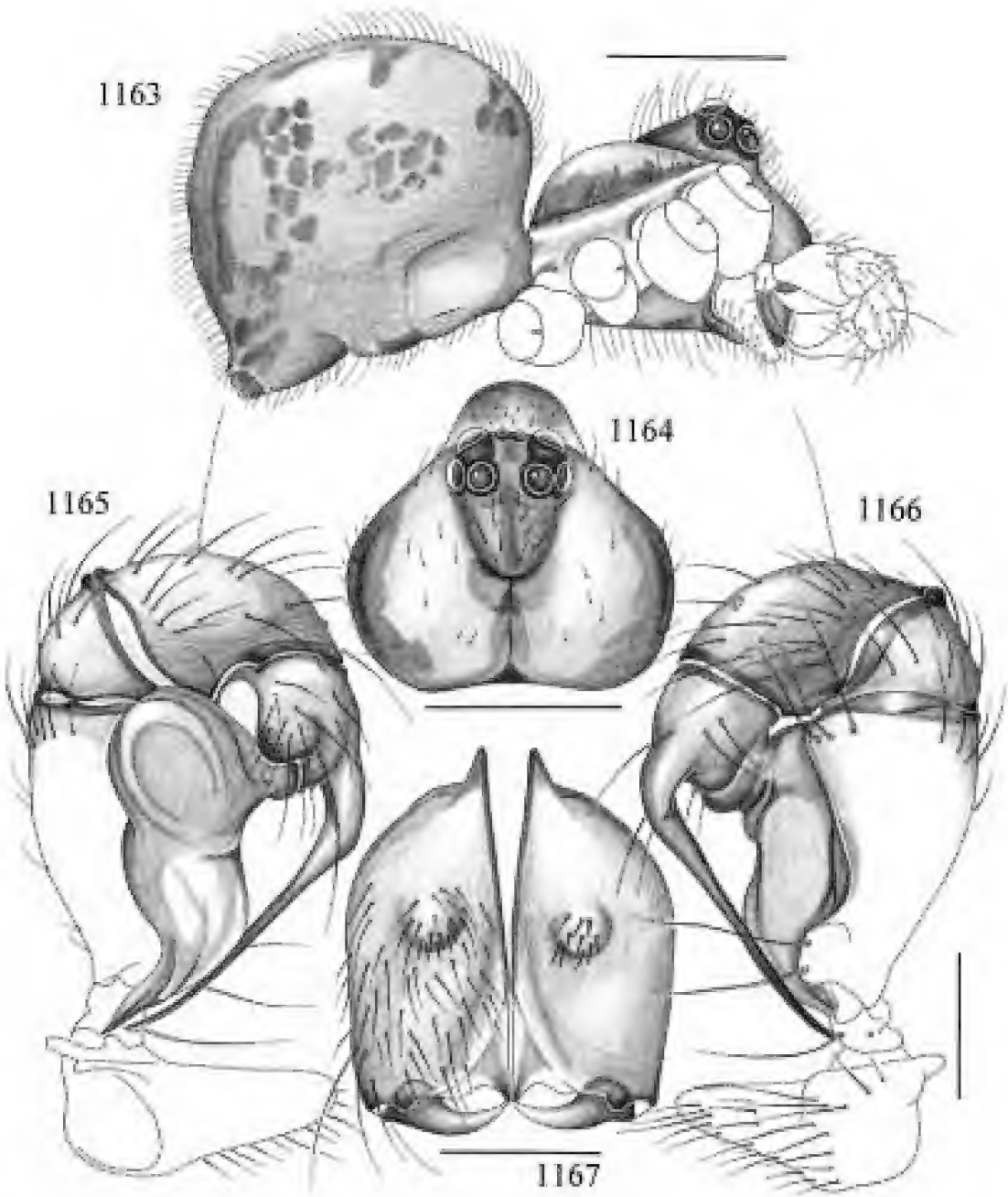
MALE (holotype): Total length 1.7, carapace width 0.75; leg 1: 28.7 (6.9+0.3+6.8 +12.5+2.3), tibia 2: 4.4, tibia 3: 3.1, tibia 4: 3.9; tibia 1 l/d: 93. Habitus and prosoma as in figs. 1168–1170; distinct thoracic groove, six eyes in widely separated triads on slightly elevated ocular area; distance PME-ALE about 70% of PME diameter. Entire prosoma monochromous ochre-yellow, only faint U mark behind ocular area and slightly darker frontal part of sternum (fig. 1173). Chelicerae with pair of patches of modified hairs proximally, and pair of simple rounded apophyses distally (figs. 1174–1175). Palps as in figs. 1171–1172, ochre-yellow, only procursus light brown, retrolateral coxal apophysis round, indistinct, femur with proximal retrolateral hump, widened distally (fig. 1177), bulb with prominent apophysis, procursus widely curved, with dorsal projection proximally (fig. 1176). Legs ochre-yellow, with slightly darker patellae and tibia-metatarsus joints; without spines and curved hairs, with many vertical hairs on all tibiae; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 with ~ 30 pseudosegments. Opisthosoma oval, monochromous pale greenish-yellow.

VARIATION: Tibia 1 in four males: 6.0–6.7; in some males there are tiny dark spots in the position of the AME.

FEMALE (type locality): Total length (N = 2) 1.7, 1.9; tibia 1 (N = 2) 4.1, 4.5. In general very similar to male, but without vertical hairs on tibiae. Epigynum hardly darker than abdomen, elevated but simple (figs. 1178–1179), internally only pore plates and valve discernible (fig. 1180). One female from type locality with brown sternum.

DISTRIBUTION: Known only from Dept. del Valle, Colombia.

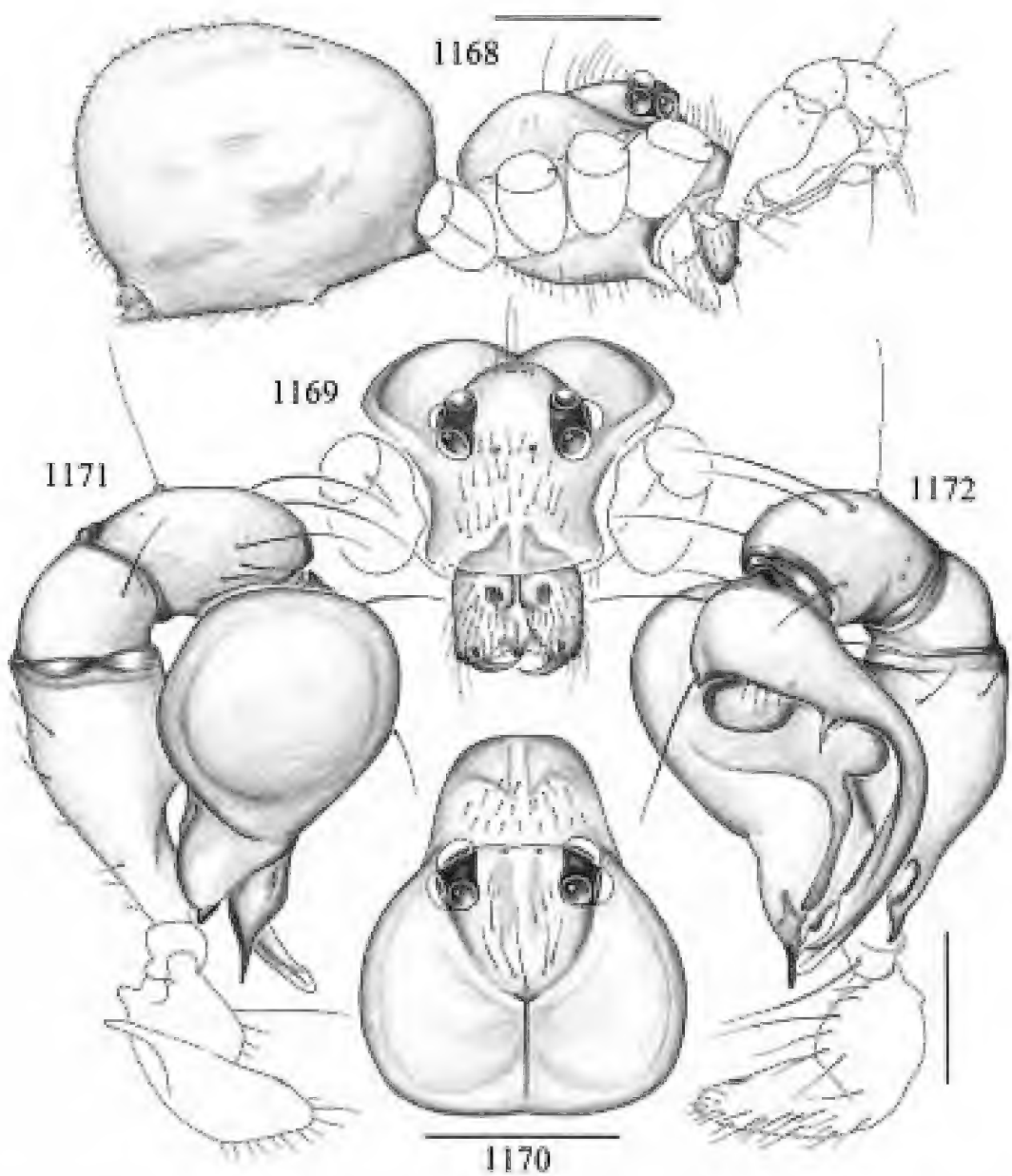
NATURAL HISTORY: Even though the pale coloration and reduction of AME might suggest adaptation to cave life, the spider has been collected from webs in a vine on a tree



Figs. 1163–1167. *Pomboa cali*, n. gen., n. sp., male. **1163**. Habitus, lateral view. **1164**. Prosoma, dorsal view. **1165**. Left palp, prolateral view. **1166**. Left palp, retrolateral view. **1167**. Chelicerae, frontal view. Scale lines: 1.0 mm (1163–1164), 0.3 mm (1165–1167).

2 m above the ground where they spun (presumably) sheet webs ~ 15 cm across (those with "I.D. # 1119"; W. G. Eberhard, personal commun.).

MATERIAL EXAMINED: COLOMBIA: *Dept. del Valle*: near Yotoco: types above, and one juvenile with same data in other vial (MCZ); same data as types (without "I.D. # 1119"),



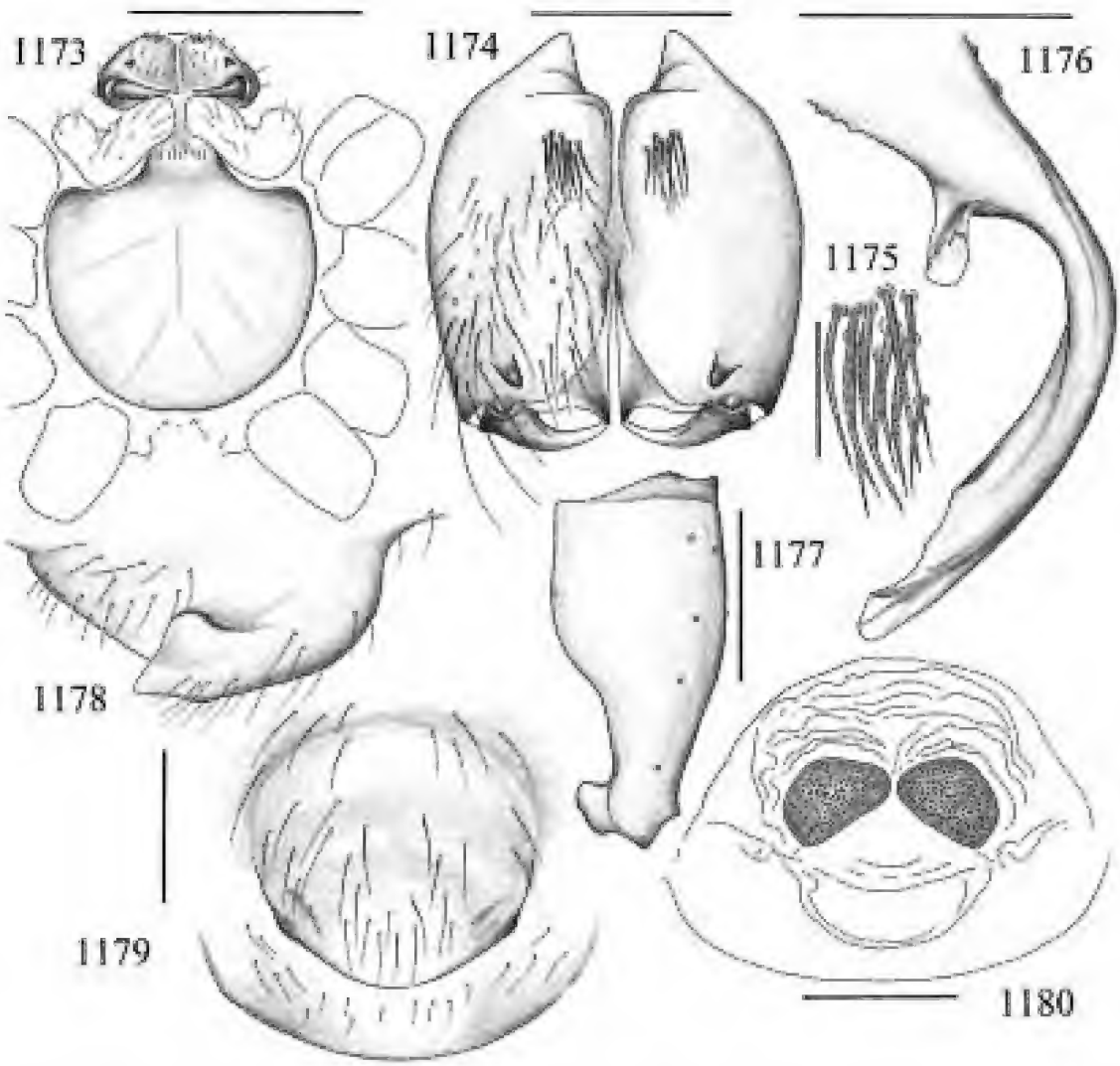
Figs. 1168–1172. *Pomboa pallida*, n. gen., n. sp., male. **1168**. Habitus, lateral view. **1169–1170**. Prosoma, frontal and dorsal views. **1171**. Left palp, prolateral view. **1172**. Left palp, retrolateral view. Scale lines: 0.5 mm (1168–1170), 0.2 mm (1171–1172).

1♂ 1♀ 4 juveniles (MCZ); Yotoco, 1500 m elev., "E235," Aug. 1977 (W. G. Eberhard), 1♀ (MCZ); same data (without "E235"), 2♂ 2♀ 1 juvenile (MCZ); Lago Calima, 1300 m elev., Mar. 1975 (W. G. Eberhard), 1♂ (MCZ).

LITOPORUS SIMON, 1893

Litoporus Simon, 1893b: 483 (type species by original designation *L. aerius* Simon, 1893; examined).

DIAGNOSIS: Small (total length ~ 1.5–2



Figs. 1173–1180. *Pomboa pallida*, n. gen., n. sp. **1173**. Male prosoma, ventral view. **1174**. Male chelicerae, frontal view. **1175**. Modified hairs on male chelicerae. **1176**. Left procursus, retrolateral view. **1177**. Male left palpal femur, retrolateral view. **1178–1179**. Epigynum, lateral and ventral views. **1180**. Epigynum, dorsal view. Scale lines: 0.5 mm (1173), 0.2 mm (1174, 1176–1180), 0.05 mm (1175).

mm), pale, eight-eyed pholcids with oval opisthosoma, extremely long thin legs. Distinguished from similar genera (*Otavaloa*, certain *Mesabolivar* species) by the high ratio of male femur 1/tibia 1 (femur 1 usually > 1.15 × tibia 1).

DESCRIPTION: Total length ~ 1.5–2 mm. Carapace monochromous ochre-yellow, with distinct thoracic groove, eight eyes on moderately elevated ocular area, AME smallest. Distance PME-ALE large (~ 60–80% of PME diameter). Male clypeus usually unmodified. Male chelicerae variable, typically with 2–3 pairs of rounded, flattened apophyses, or with just one pair of simple, pointed apophyses; without stridulatory ridges. Male palps small in relation to overall size; coxa with (rarely without) retrolateral apophysis, femur usually with large ventrodistal bulge, procursus usually very simple; bulb with usually membranous, relatively complex embolar division. Tarsal organ exposed (examined: *L. dimona*, n. sp.; *lopez*, n. sp.). Legs extremely thin and long (leg 1 about 20 ×

body length; tibia 1 l/d usually > 100), leg 1 always longest, legs 2 and 4 about same length, leg 3 shortest; femur 1 significantly longer than tibia 1; legs without dark rings, femora and tibiae distally whitish; without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 very proximal (at 1–2%); tarsus 1 with ~ 20 to over 30 pseudosegments. Opisthosoma oval, with or without dark markings. Male gonopore without epiandrous spigots (examined: *L. dimona*: fig. 141, *lopez*). ALS with only one piriform gland spigot each (examined: *L. dimona*, *lopez*: fig. 172), other spinnerets typical for family.

Female known in only four species, none of them very closely related to type species (see Specific Relationships below). In these species, sexual dimorphism very slight, epigyna differ considerably (see species descriptions below).

MONOPHYLY: The species included share the high ratio of male femur 1/tibia 1; also the extremely long legs, body size, shape, and color. The species closest to the type species (see Specific Relationships below) also share the flattened apophyses on the male chelicerae.

GENERIC RELATIONSHIPS: *Litoporus* is similar in habitus to *Otavaloa*, but in that genus the genitalia are very different (palpal femur without ventral bulge, procursus conspicuously curved, different type of armature on male chelicerae). Also very similar in habitus is *Mesabolivar* (previously *Litoporus*) *luteus*, but in this and related species the femur is hardly longer than the tibia, and the hood on the epigynum is herein used to transfer *L. luteus* to *Mesabolivar*. *Litoporus* may instead be closer to a group of mainly Venezuelan genera that share rounded apophyses or bulges on the palpal femora (*Mecoloesthus*, *Coryssocnemis*, *Systenita*). Otherwise, however, these genera appear very different. The close relationship with *Pomboa* suggested by the cladogram in appendix 2 is based on the large distance between the eye triads (char. 2) and is probably artificial. (Note that one of the three most parsimonious trees found by NONA does not include this sister group relationship.) Whatever the sister group, *Litoporus* is clearly an element of the New World clade (thoracic groove, large distance PME-ALE, retrolateral coxal apophysis, epiandrous spigots absent, ALS piriform gland spigots reduced to one, exposed tarsal organ).

SPECIFIC RELATIONSHIPS: Three of the species newly described (*L. dimona*; *saul*, n. sp.; *secoya*, n. sp.) seem to be closely related to the type species: they share the typical flat, rounded apophyses on the male chelicerae, and have extremely similar procursi. The other species (*L. lopez*; *uncatus* (Simon); *manu*, n. sp.; *pakitza*, n. sp.; *yucumo*, n. sp.) differ considerably in the armature of the chelicerae, and *L. uncatus* has also a more complicated procursus. These species are therefore assigned tentatively to the genus.

MISPLACED SPECIES: Of the 13 species previously assigned to *Litoporus*, all but the type species and one species incertae sedis are herein either transferred to other genera, or synonymized [*L. abrahami* is correctly placed, but a synonym of *L.* (previously *Coryssocnemis*) *uncatus*]. Most species are transferred to *Mesabolivar*: *L. argentinensis*, *brasiliensis*, *tandilicus*, *luteus* and its synonyms (*coccineus*, *fulvus*, *imbecillus*); *L. aberrans* is transferred to *Chibchea*, *L. genitalis* to *Carapoia*; *L. iguassuensis* to *Tupigea*; *L. agricola* cannot be placed (see appendix 3).

NATURAL HISTORY: There are data on the tentatively assigned *L. lopez* only (see description of this species below).

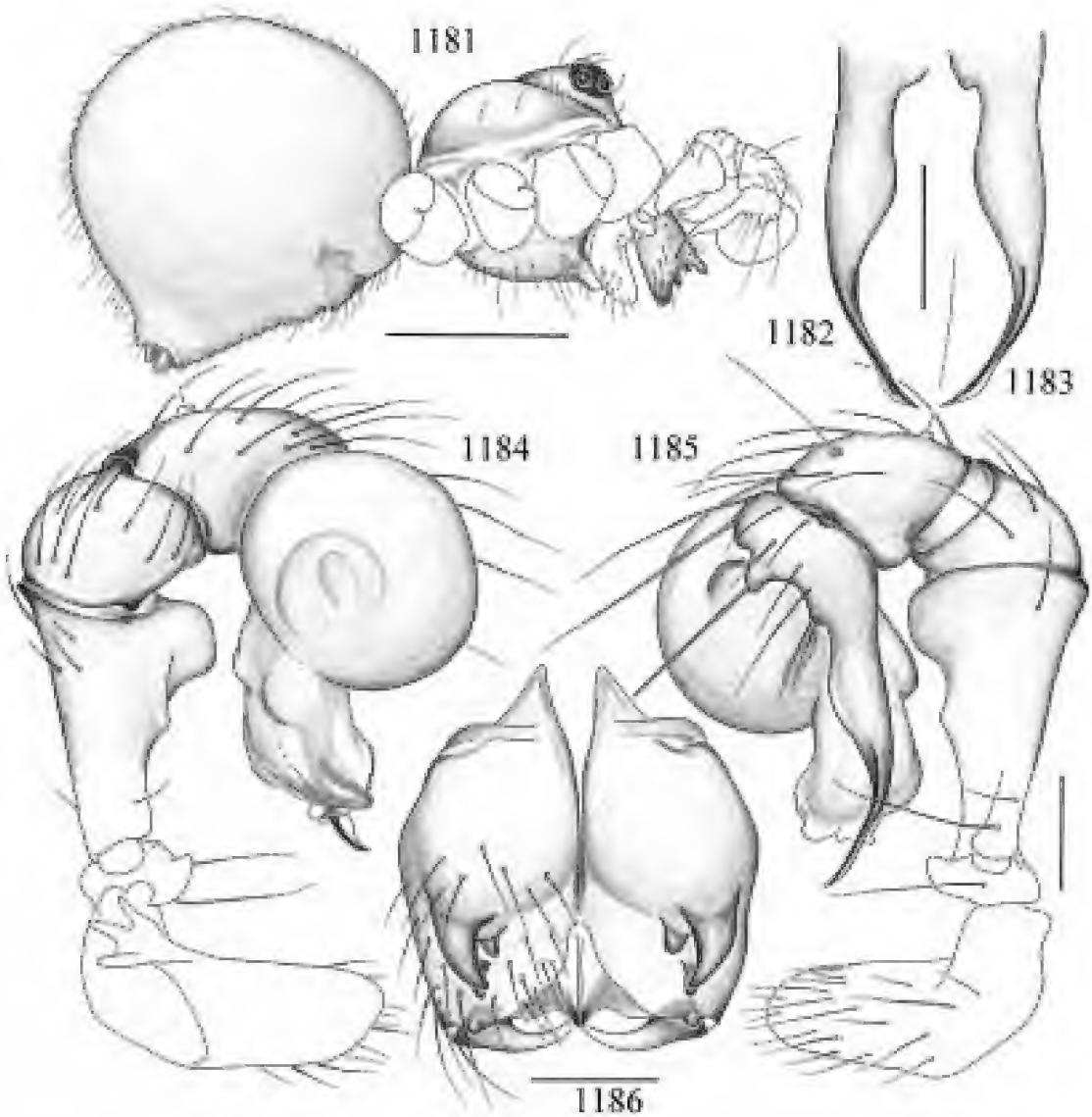
DISTRIBUTION: Widely distributed in northern and central South America.

COMPOSITION: The genus as construed here includes 10 nominal species: the type *L. aerius*, not treated herein (see Huber, 1997b, for redescription); *L. uncatus*, redescribed below; and the seven species newly described below. The tenth species (*Litoporus agricola* Mello-Leitão, 1922) is incertae sedis. I have seen further undescribed species from Peru and Bolivia (in MUSM and AMNH).

Litoporus dimona, new species

Figures 141, 1181–1186

TYPES: Male holotype, 2♂ paratypes (3 vials) from Dimona Reserve, ~ 80 km N Manaus, Amazonas, Brazil; 1989–1992 (H. G. Fowler), in MCZ.



Figs. 1181–1186. *Litoporus dimona*, n. sp., male. **1181**. Habitus, lateral view. **1182**. Left procursus, prolateral view. **1183**. Left procursus, retrolateral view. **1184**. Left palp, prolateral view. **1185**. Left palp, retrolateral view. **1186**. Chelicerae, frontal view. Scale lines: 0.5 mm (1181), 0.1 mm (1182–1186).

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Close relative of the type species *L. aerius* Simon, *saul*, and *secoya*; distinguished by the number (three) and shape of the apophyses on the male chelicerae (fig. 1186; all others have two).

MALE (holotype): Total length 1.4, carapace width 0.7; leg 1: 31.8 (8.8+0.3+7.1 +13.9+1.7), tibia 2: 5.1, tibia 3: 3.5, tibia 4: 4.9; tibia 1 l/d: 118. Habitus as in fig. 1181; prosoma ochre-yellow, frontal view as in *L. lopez* (cf. fig. 1197); distance PME-ALE about 75% of PME diameter. Chelicerae with three pairs of brown apophyses (fig. 1186). Palps as in figs. 1184–1185, light brown, coxa without retrolateral apophysis, femur with proximal retrolateral apophysis and blunt ventral protrusion distally, procursus simple, tapering distally into black slender

spine (figs. 1182–1183). Tarsal organ exposed. Legs light brown, with slightly lighter tips distally on femora and tibiae; without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 2%; tarsus 1 with ~ 30 pseudosegments. Opisthosoma pale greenish, without markings except light brown lung plates; gonopore without epiandrous spigots (fig. 141); ALS with only one piriform gland spigot each.

FEMALE: Unknown.

VARIATION: Tibia 1 in male paratypes: 6.4, 7.1.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BRAZIL: *Amazonas:* Dimona Reserve, 80 km N Manaus: types above.

Litoporus saul, new species

Figures 1187–1190

TYPE: Male holotype from Mont Boeuf Mort, Saül, French Guiana; Oct. 4, 1981 (S. Marshall), in AMNH.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Close relative of the type species *L. aerius* Simon, *dimona*, and *secoya*; distinguished by the number and shape of the male cheliceral apophyses (compare figs. 1186–1187, 1191, and fig. 9D in Huber, 1997b).

MALE (holotype): Total length 1.5, carapace width 0.8; leg 1: 32.5 (8.8+0.3+7.4 +14.4+1.6), tibia 2: 4.5, tibia 3: 3.6, tibia 4: 5.1; tibia 1 l/d: 110. Prosoma shape as in *L. lopez* (cf. figs. 1195–1197), ochre-yellow; distance PME-ALE about 75% of PME diameter. Chelicerae with two pairs of brown apophyses (fig. 1187). Palps light brown, general shape as in *L. dimona* (cf. figs. 1184–1185), even bulb and procursus tip almost identical (figs. 1188–1190). Legs light brown, with whitish tips distally on femora and tibiae; about second half of metatarsus also whitish; without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 1.4%. Opisthosoma shape as in *L. lopez* (cf. fig. 1195), pale grayish-ochre without markings.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: FRENCH GUIANA: *Inini*: Saül: Mont Boeuf Mort: type above.

NOTE: The label reads "ex: small reg. horizontal orb, nr. ground hung un. web, descr. circle w/body in clockwise direction." The web is certainly not an orb-web, but probably of much the same structure as that described by Eberhard and Briceño (1985) for *Litoporus lopez* (see description of that species below for brief summary of web structure).

Litoporus secoya, new species

Figures 1191–1194

TYPE: Male holotype from near Puerto Asis, Rio Putumayo, Dept. Putumayo, Colombia; no date (W. G. Eberhard), in MCZ.

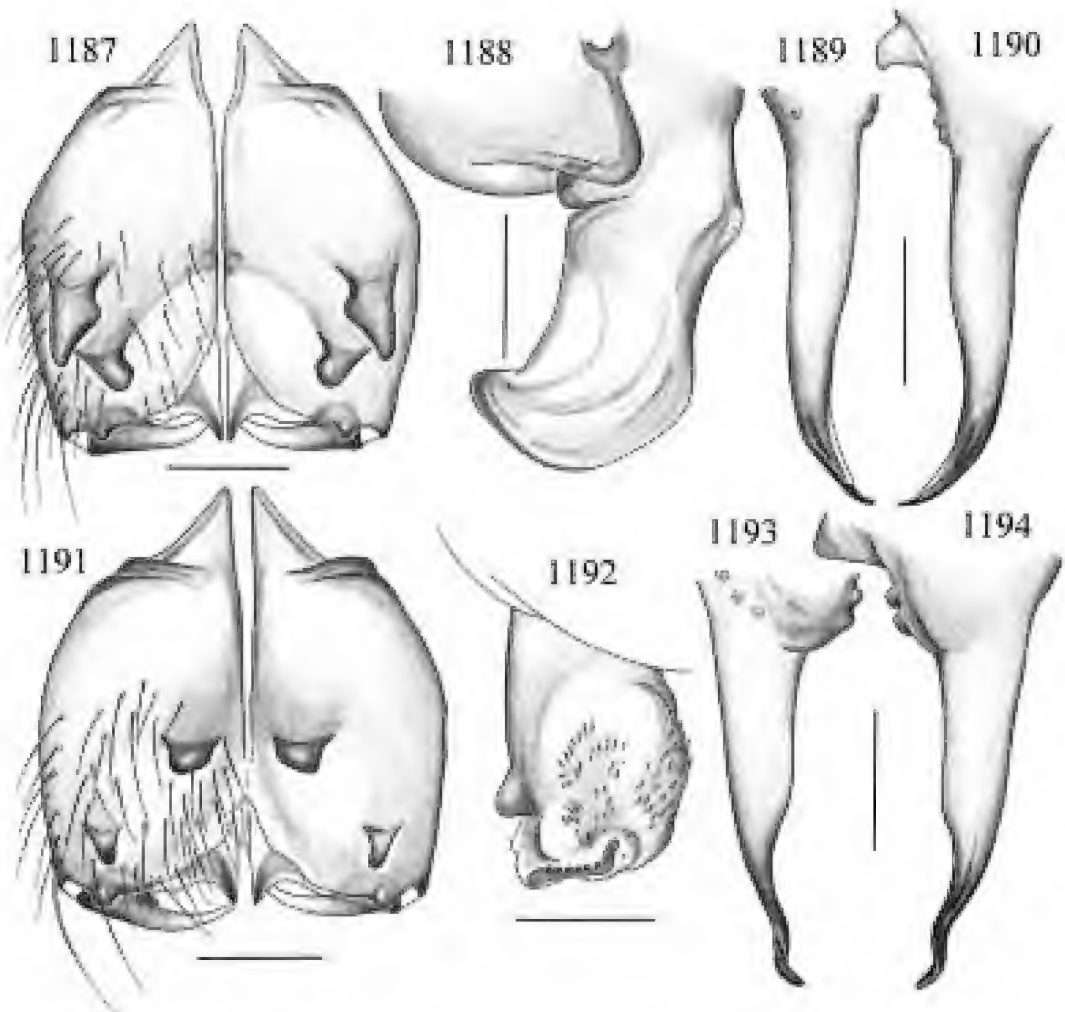
ETYMOLOGY: The specific name is a noun in apposition honoring the Secoya, an Indian tribe in northeastern Ecuador, who resisted "pacification" by missionaries, but nevertheless declined in numbers from European-imported diseases.

DIAGNOSIS: Close relative of the type species *L. aerius*, *dimona*, and *saul*; distinguished by the number and shape of the male cheliceral apophyses (compare figs. 1186–1187, 1191, and fig. 9D in Huber, 1997b).

MALE (holotype): Carapace width 0.9; leg 1: 32.5 (11.3+0.3+9.6+18.1+2.1), tibia 2: 6.8, tibia 3: 4.6, tibia 4: 6.4; tibia 1 l/d: 114. Prosoma ochre-yellow, shape as in *L. lopez* (cf. figs. 1195–1197); distance PME-ALE about 60% of PME diameter. Chelicerae with two pairs of brown apophyses (fig. 1191). Palps light brown, general shape as in *L. dimona* (cf. figs. 1184–1185), bulb with distinctive structures on embolar division (fig. 1192), procursus simple, slightly spiraling distally (figs. 1193–1194). Legs light brown, with whitish tips distally on femora and tibiae; about second half of metatarsus also whitish; without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 1.3%; tarsus 1 with over 30 pseudosegments. Opisthosoma missing.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.



Figs. 1187–1194. *Litoporus* spp. 1187–1190. *L. saul*, n. sp., male holotype. **1187**. Chelicerae, frontal view. **1188**. Embolar division of left bulb, retrolateral view. **1189**. Left procursus, prolateral view. **1190**. Left procursus, retrolateral view. 1191–1194. *L. secoya*, n. sp., male holotype. **1191**. Chelicerae, frontal view. **1192**. Embolar division of left bulb, prolateral view. **1193**. Left procursus, prolateral view. **1194**. Left procursus, retrolateral view. Scale lines: 0.1 mm.

MATERIAL EXAMINED: COLOMBIA: *Putumayo*: near Puerto Asis: type above.

Litoporus lopez, new species

Figures 172, 1195–1206

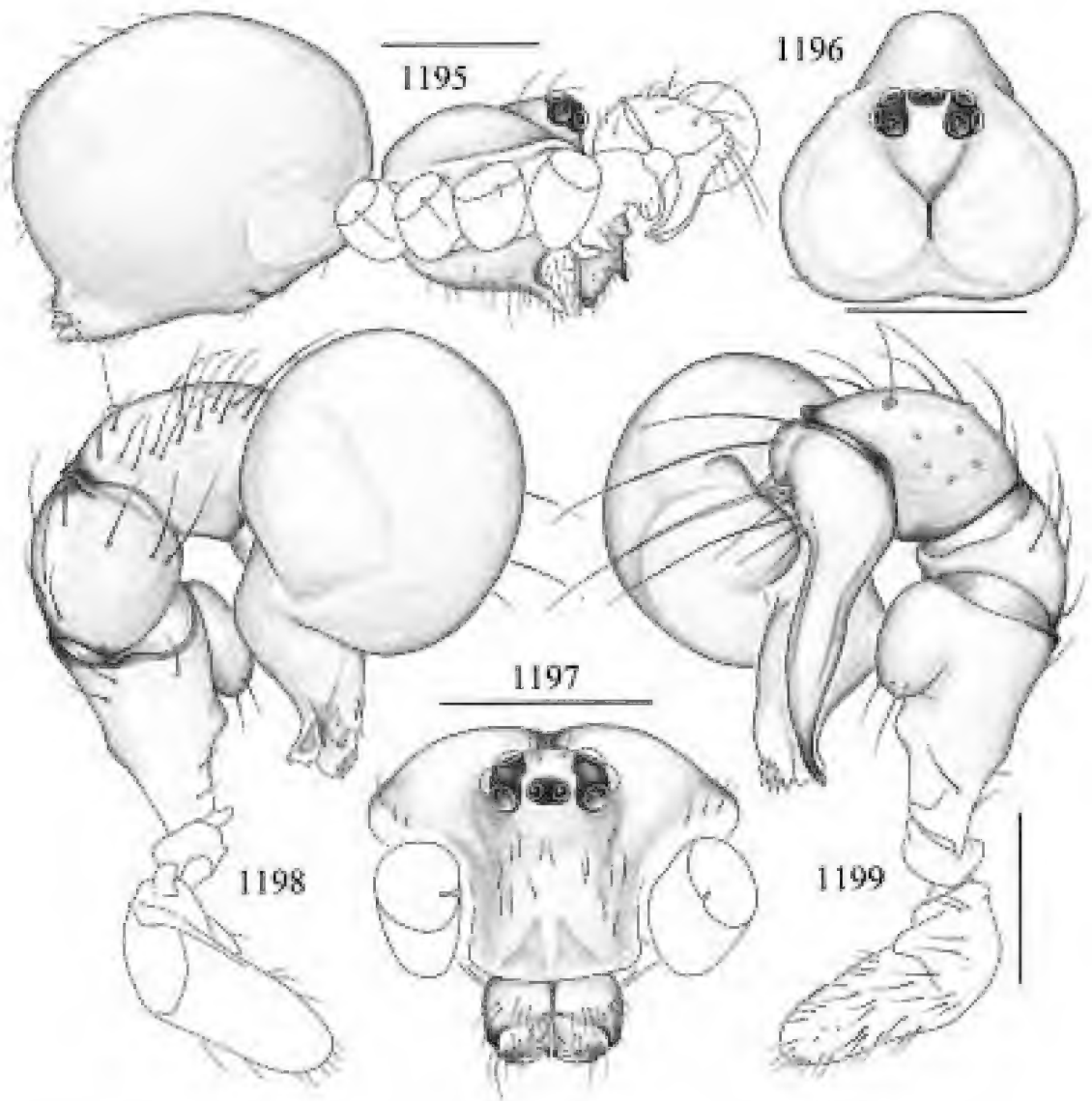
Modisimus sp. A: Eberhard and Briceño, 1983: 189–195; 1985: 29–36, figs. 1, 2e–f.

TYPES: Male holotype, 22♂ 8♀ paratypes (''voucher specimens for study of Eberhard and Briceño'', ''*Modisimus* sp. A'') from 15 km SE Puerto López, Dept. Meta, Colombia; July 1970 (W. G. Eberhard), in MCZ.

ETYMOLOGY: Named for the town near the type locality. The specific name is a noun in apposition.

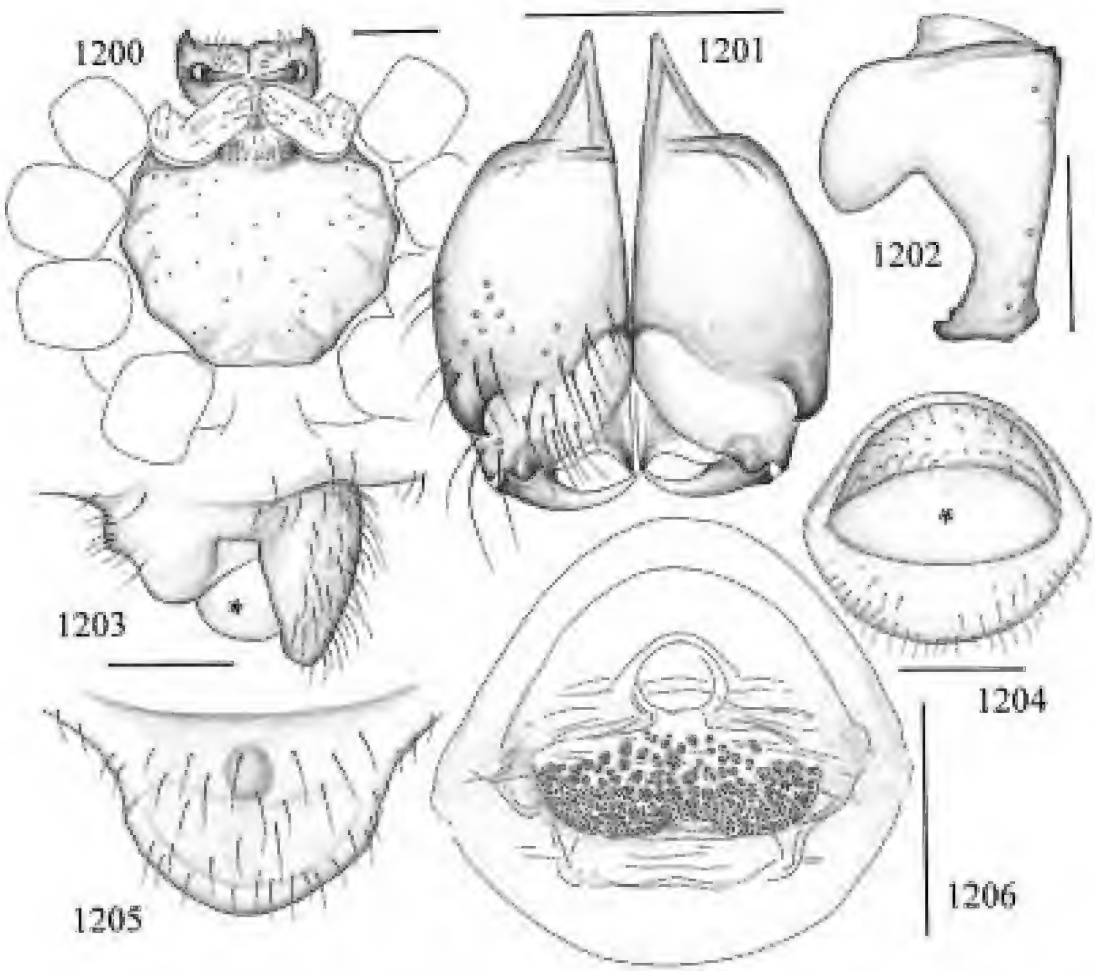
DIAGNOSIS: Distinguished from congeners by the single pair of cheliceral apophyses in a lateral position (fig. 1201), the massive bulge distally on the male palpal femur (fig. 1202), and the tip of the procursus (fig. 1199).

MALE (holotype): Total length 1.8, carapace width 0.8; leg 1: 34.0 (9.3+0.4 +7.8+14.8+1.7), tibia 2: 5.2, tibia 3: 3.6, tibia 4: 5.1; tibia 1 l/d: 82. Habitus as in fig.



Figs. 1195–1199. *Litoporus lopez*, n. sp., male. **1195**. Habitus, lateral view. **1196–1197**. Prosoma, dorsal and frontal views. **1198**. Left palp, prolateral view. **1199**. Left palp, retrolateral view. Scale lines: 0.5 mm (1195–1197), 0.2 mm (1198–1199).

1195. Entire spider pale ochre, only legs light brown, tips of femora and tibiae whitish, about second half of metatarsus also whitish. Carapace with thoracic groove, but relatively flat in frontal view (fig. 1197), ocular area slightly elevated, with eight eyes (figs. 1196–1197); distance PME-ALE about 60% of PME diameter. Chelicerae with pair of frontal apophyses in very lateral position (fig. 1201). Palps as in figs. 1198–1199, with distinct retrolateral apophysis on coxa, proximal apophysis and large distal bulge on femur (fig. 1202), simple curved procursus, embolar division of bulb with membranous processes and small apophysis (figs. 1198–1199). Palpal tarsal organ exposed. Legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 2%; tarsus 1 with ~ 30 pseudosegments. Gonopore without epiandrous spigots; ALS



Figs. 1200–1206. *Litoporus lopez*, n. sp. **1200**. Male prosoma, ventral view. **1201**. Male chelicerae, frontal view. **1202**. Left palpal femur, retrolateral view. **1203–1204**. Epigynum, lateral and ventral views (asterisks mark plug). **1205**. Epigynum, frontal view. **1206**. Epigynum, dorsal view. Scale lines: 0.2 mm.

with only one piriform gland spigot each; other spinnerets typical for family (fig. 172).

FEMALE (paratype): Total length 1.7, carapace width 0.7; leg 1: 17.2 (4.6+0.3+3.9 +7.0+1.4), tibia 2: 2.3, tibia 3: 1.5, tibia 4: 2.3; tibia 1 l/d: 56. Habitus as in male. Epigynum only slightly darker than surrounding cuticle, shape as in figs. 1203–1205; internal genitalia with undivided pore field and median receptacle(?) (fig. 1206).

VARIATION: Tibia 1 in 18 males: 7.0–8.5 ($\bar{x}$ = 7.8); tibia 1 in 6 females: 3.5–4.2 ($\bar{x}$ = 3.9).

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: COLOMBIA: *Meta:* 15 km SE Puerto López: types above.

NATURAL HISTORY: Eberhard and Briceño (1983, 1985) give information about the population at the type locality, which is characterized as tropical dry forest. In the undergrowth, the spiders built domed sheets or platforms with relatively open mesh and a small tangle of threads above, with a dome-shaped retreat under a leaf. Mature males and females often shared webs, and males sometimes ceded prey to females, although being behaviorally dominant. Paired males were larger than solitary males, but fed less often. Defensive behavior consisted of whirling in

more or less horizontal circles. Additional points briefly described concern male fights, courtship and copulation, and web construction.

Litoporus uncatus (Simon, 1893), new combination

Figures 1207–1211

Coryssocnemis uncatus Simon, 1893a: 321; 1893b: 479–483, fig. 472.—Huber, 1997b: 582, figs. 6A–E, 7A–B.

Litoporus abrahami Mello-Leitão, 1947b: 164, fig. 11. NEW SYNONYMY.

JUSTIFICATION OF SYNONYMY: The male lectotype of *Litoporus abrahami* was compared with Simon's male of *Coryssocnemis uncatus* (see Notes below), and with further material of both sexes listed below, which proved the conspecificity of the female described by Simon with the type specimen of *Litoporus abrahami*.

TYPES: *Coryssocnemis uncatus*: male (see Notes below), from Pebas, Dept. Loreto, Peru; ~ 100 m elev., no date (M. de Mathan), in MNHN (3858), examined. *Litoporus abrahami*: male lectotype (designated herein; see Notes below), from "Kuruabaru Ck" (Kuruabaru River: 5°25′N, 58°22′W), Cattle Trail Survey, Guyana; Sept. 1919 (A. A. Abraham), in BMNH (1923.VII.23.178-180), examined.

NOTES: As noted in a previous paper (Huber, 1997b), Simon (1893a, 1893b) described only the female of this species. This female is probably lost, and the MNHN has only the male above, which was probably assigned later (by Simon himself, as the label suggests; see Huber, 1997b) to the species, and is therefore not formally assigned type status. The record of a male and female specimen together (see below) corroborates the conspecificity of the male in the MNHN with Simon's (1893a, 1893b) female.

The *Litoporus abrahami* lectotype is accompanied by two further specimens: a juvenile non-pholcid, and a female *Mesabolivar aurantiacus*. Mello-Leitão (1947b) described a male, leaving no doubt about which has to be the lectotype.

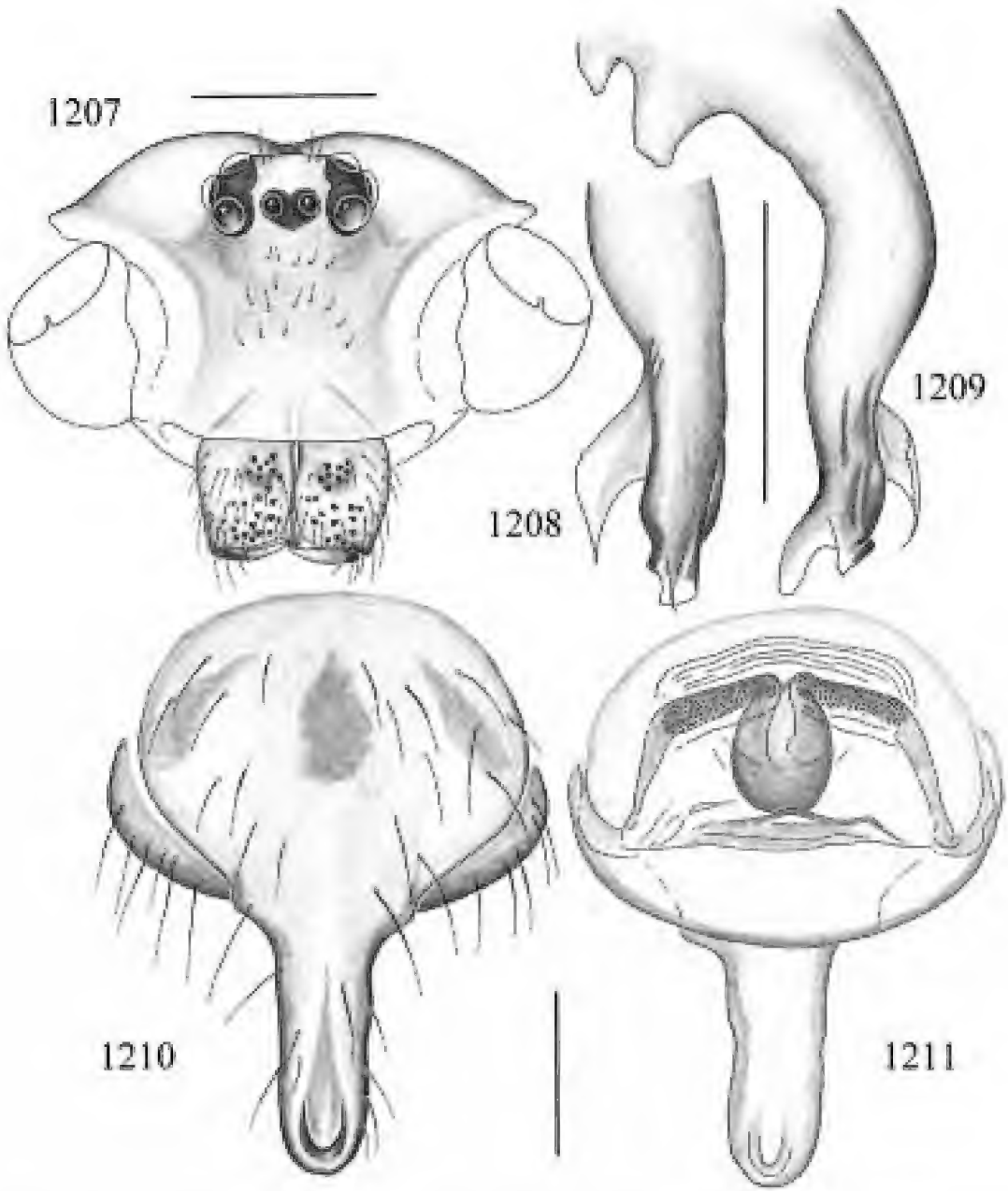
DIAGNOSIS: Easily distinguished from congeners by the many sclerotized rounded apophyses frontally on the male chelicerae (fig. 1207), the subdistal fringe on the procursus (figs. 1208–1209), and the long scape on the epigynum (fig. 1210).

MALE (see Huber, 1997b, for general description of male): Tibia 1 (N = 6) 8.3–11.2 ($\bar{x}$ = 10.0); distance PME-ALE about 80% of PME diameter. Procursus with characteristic semitransparent subdistal fringe (figs. 1208–1209). All legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 2%; femur 1/tibia 1: 1.22–1.39 (N = 4); tarsus 1 with ~ 20 pseudosegments. Measurements of *L. abrahami* lectotype: tibia 1: 9.6, tibia 2 missing, tibia 3: 4.3, tibia 4: 6.5.

FEMALE (Dept. Amazonas, Venezuela): Leg 1: 44.9 (11.5+0.5+10.6+19.5+2.8), tibia 2: 7.5. In general very similar to male. Epigynum with long, scapelike process with pocket at its tip (fig. 1210); dorsal view as in fig. 1211.

DISTRIBUTION: Widely distributed throughout northern South America, apparently restricted to lowland forests (map 8).

MATERIAL EXAMINED: PERU: *Loreto*: Pebas: 1♂ type of *Coryssocnemis uncatus* (see Types above); Rio Samiria (04°43′S, 74°18′W), May–June 1990 (T. Erwin "et al."), 4♂ (2 vials) in MUSM; Jenaro Herrera (4°55′S, 73°45′W), ~ 100 m elev., Aug. 24, 1988 (D. Silva), 1♂ in MUSM; *Amazonas*: "alto Rio Comaina," 850–1150 m elev., Oct. 21–Nov. 3, 1987 (D. Silva), 3♂ 1 juvenile in MUSM; *San Martín*: 20 mi SE Moyobamba, June 1–30, 1947 (F. Woytkowski), 1♂ in AMNH. ECUADOR: *Napo*: "Oriente: Misuagualli" (Misahualli: 1°02′S, 77°41′W) Mar. 21, 1971 (R. A. Sweet), 1♂ in AMNH. COLOMBIA: *Caquetá*: Rio Orteguaza, 200 m elev., Aug.–Sept. 1947 (L. Richter), 1♂ in AMNH. VENEZUELA: *Amazonas*: "Lgarap'e forest of upper Rio Yaciba," Dec. 7, 1953 (W. M. Beebe), 1♂ in AMNH; "Camp # 3," Dec. 28, 1953 (E. MacGuire), 1♂ 1♀ in AMNH. GUYANA: Kuruabaru River: 1♂ lectotype of *L. abrahami* (see Types above); Rupununi River, Makarapan, Oct. 5, 1937 (collector not given), 1♂ in MZF; Kaietur, Aug. 14, 1911 (F. E. Lutz), 1♂ in AMNH; Rockstone, July 1911 (collector not given), 1♂ in AMNH; "Turkeit" (Tukeit Fall: 5°12′N, 59°26′W), July 18, 1911 (F. E. Lutz),



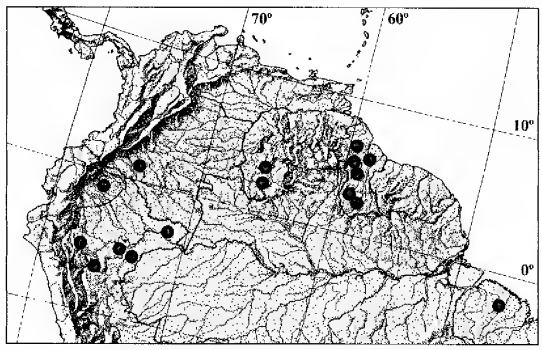
Figs. 1207–1211. *Litoporus uncatus* (Simon). **1207**. Male prosoma, frontal view. **1208**. Left procursus, dorsal view. **1209**. Left procursus, retrolateroventral view. **1210**. Epigynum, ventral view. **1211**. Epigynum, dorsal view. Scale lines: 0.4 mm (1207), 0.2 mm (1208–1211).

1♂ in AMNH; Kartabo (6°23′N, 58°42′W), 1924 (collector not given), 1♂ in AMNH. BRAZIL: *Pará*: Aldeia Coraci (2°34′S, 46°37′W), 12 km W Canindé, Rio Gurupi, Apr. 16–26, 1963 (B. Malkin), 1♂ in AMNH.

Litoporus yucumo, new species

Figures 1212–1218

TYPES: Male holotype, 1♂ 1♀ paratypes from 16.8 mi SW Yucumo (~ 15°23′S, 66°59′W), Dept. Beni, Bolivia; ~ 500 m



Map 8. Known distribution of *Litoporus uncatus* (Simon).

elev., Nov. 15–19, 1989 (J. Coddington, C. Griswold, D. Silva, S. Larcher, E. Peñaranda), in USNM.

ETYMOLOGY: Named for the town near the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Easily distinguished from known congeners by the finger-shaped apophysis on the male clypeus (fig. 1213: arrow), and by the pair of pointed apophyses frontally on the male chelicerae (fig. 1212).

MALE (holotype): Total length 1.8, carapace width 0.84; leg 1: 38.6 (10.5+0.4+8.8 +17.2+1.7), tibia 2: 6.1, tibia 3: 4.3, tibia 4: 5.6; tibia 1 l/d: 94. Habitus and prosoma shape typical for genus (cf. figs. 1195–1197); entire prosoma ochre-yellow, only thoracic groove with thin brown line. Clypeus with characteristic apophysis (figs. 1212–1213); without humps on sternum; distance PME-ALE about 100% of PME diameter. Chelicerae with only one pair of pointed brown apophyses frontally (fig. 1212). Palps as in fig. 1216, ochre-yellow, only tips of procursi blackish, coxa with retrolateral apophysis, femur with proximal and distal ventral bulge, procursus simple, gently S-curved (figs. 1214–1215), embolar division closely accompanying procursus. Legs ochre-yellow, distal tips of femora and tibiae and second half of metatarsus whitish; without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 1.8%; tarsus 1 with ~ 30 pseudosegments (difficult to count proximally). Opisthosoma greenish-gray, shape as in *L. lopez* (cf. fig. 1195).

VARIATION: Tibia 1 in two other males: 7.7, 8.7.

FEMALE: Very similar to male, but with distinct dark Y mark on carapace. Tibia 1 in two females: 4.3, 5.2. Epigynum very small, simple rectangular plate (fig. 1218), greenish to light brown; internal genitalia as in fig. 1217, apparently with large membranous sac between uterus externus and epigynal plate.

DISTRIBUTION: Known only from type locality in Dept. Beni, Bolivia.

MATERIAL EXAMINED: BOLIVIA: *Beni:* 16.8 mi SW Yucumo: types above; same data: 1♂ 1♀ in USNM.

Litoporus pakitza, new species

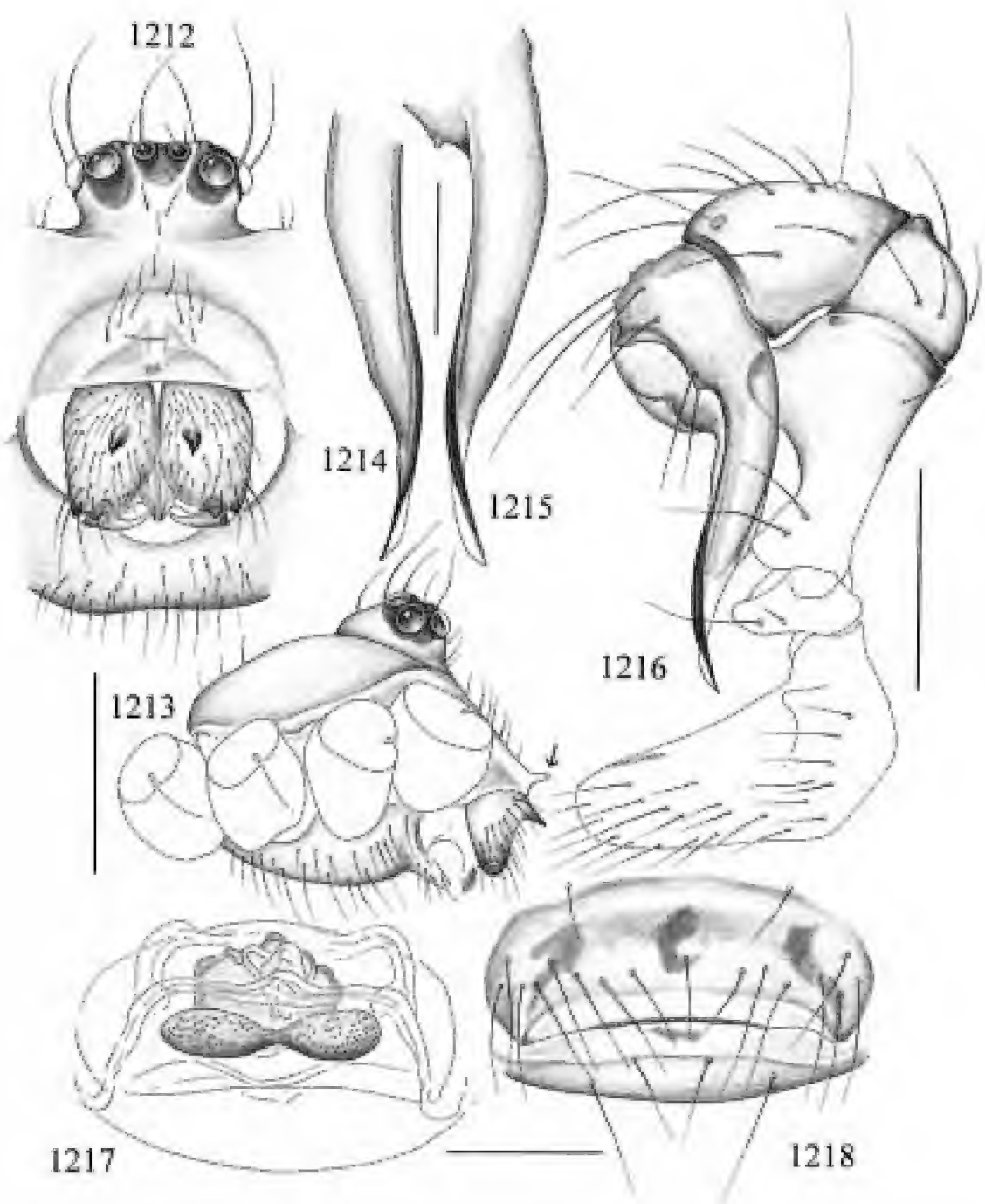
Figures 1219–1225

TYPES: Male holotype, 1♂ paratype from Pakitza, "Puesto de Vigilancia," Zona Reservada de Manú, Madre de Dios, Peru; Oct. 1, 1987 (D. Silva & J. Coddington), in USNM.

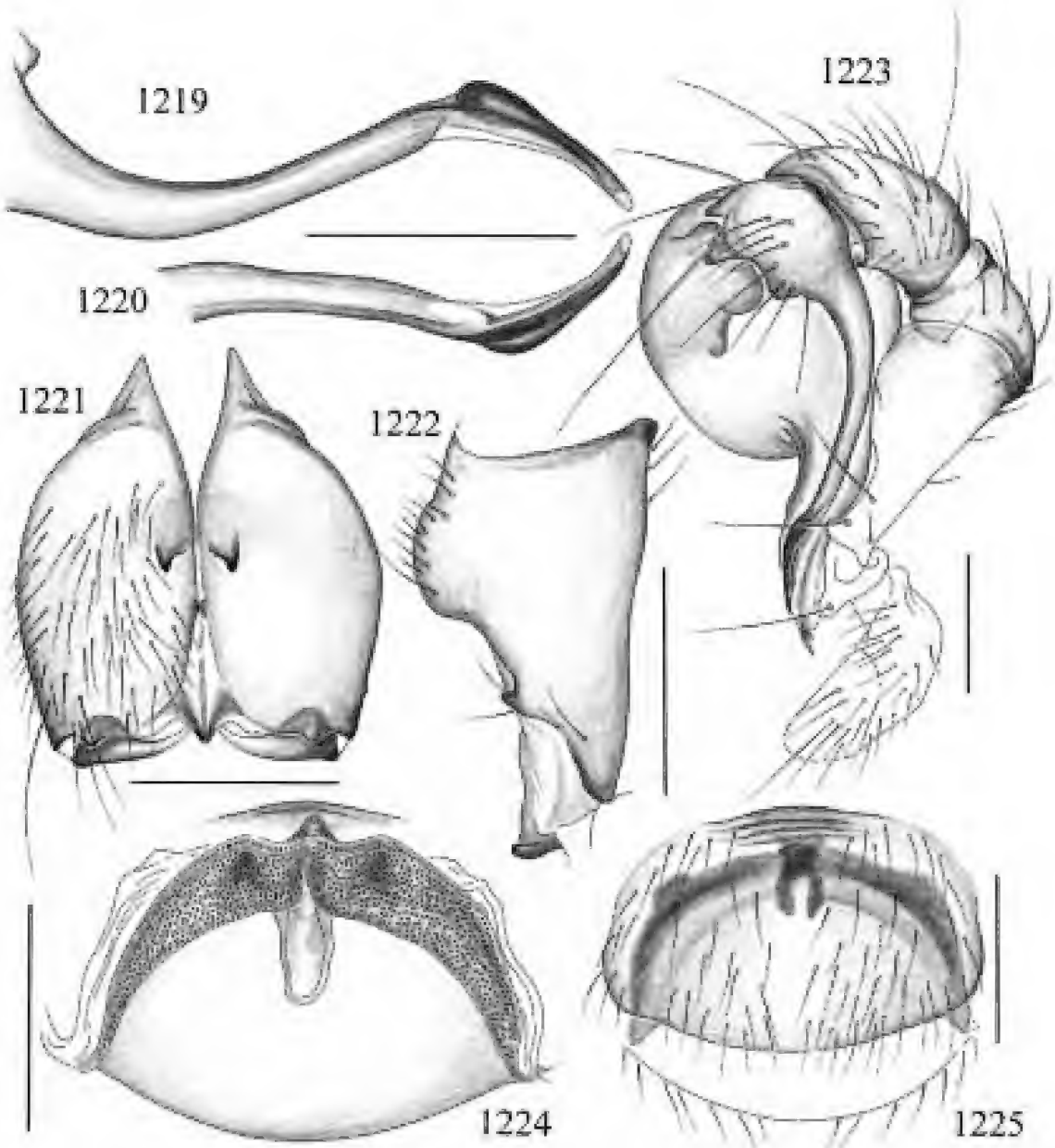
ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Easily distinguished from known congeners by the single pair of pointed apophyses proximally on the male chelicerae (fig. 1221) and by the long, slender procursus that is widened distally (figs. 1219–1220).

MALE (holotype): Total length 1.7, carapace width 0.84; leg 1: 36.1 (9.9+0.3+8.3 +16.0+1.6), tibia 2: 5.7, tibia 3: 4.1, tibia 4 missing; tibia 1 l/d: 95. Habitus and prosoma shape typical for genus (cf. figs. 1195–1197); entire prosoma ochre-yellow, only thoracic groove with brown line; without humps on sternum; distance PME-ALE about 80% of PME diameter. Chelicerae with only one pair of pointed brown apophyses proximally (fig. 1221). Palps as in fig. 1223, ochre-yellow, only tips of procursi blackish, coxa with retrolateral apophysis, femur with retrolateral apophysis proximally, widened distally (fig. 1222), procursus long and slender (figs. 1219–1220). Legs slightly darker than prosoma, femora and tibiae with light distal tips, second half of metatarsi also light; without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 1.6%; tarsus 1 with over 25 pseudosegments (dif-



Figs. 1212–1218. *Litoporus yucumo*, n. sp. **1212**. Male prosoma, frontal (slightly ventral) view. **1213**. Male prosoma, lateral view (arrow points to clypeus apophysis). **1214**. Left procursus, prolateral view. **1215**. Left procursus, retrolateral view. **1216**. Left palp, retrolateral view. **1217**. Epigynum, dorsal view. **1218**. Epigynum, ventral view. Scale lines: 0.5 mm (1212–1213), 0.2 mm (1216), 0.1 mm (1214–1215, 1217–1218).



Figs. 1219–1225. *Litoporus pakitza*, n. sp. **1219**. Right procursus, retrolateral view. **1220**. Right procursus tip, prolateral view. **1221**. Male chelicerae, frontal view. **1222**. Male right palpal femur, prolateral view. **1223**. Left palp, retrolateral view. **1224**. Epigynum, dorsal view. **1225**. Epigynum, ventral view. Scale lines: 0.2 mm.

ficult to count proximally). Opisthosoma pale greenish-gray, without markings, slightly longer than in *L. lopez* (cf. fig. 1195).

VARIATION: Tibia 1 in four other males: 8.1–8.9 ($\bar{x}$ = 8.6).

FEMALE: Very similar to male, except much shorter and thinner legs; tibia 1 (N = 5) 4.8–6.0 ($\bar{x}$ = 5.6). Epigynum very simple externally (fig. 1225), light brown with distinct greenish arch frontally; internal genitalia with large contiguous pore plates (fig. 1224).

DISTRIBUTION: Known only from Madre de Dios, Peru.

MATERIAL EXAMINED: PERU: *Madre de Dios:* Zona Reservada de Manú, Pakitza: types above; Parque Nacional Manú, Pakitza, (11°56′S, 71°17′W), 356 m elev., May 1–6, 1991 (D. Silva), 2♂ 2♀ in USNM; same locality, May 5–13, 1991 (3 vials, D. Silva), 2♂ 3♀ in MUSM; Zona Reservada de Manú, Puesto de Vigilancia, Pakitza (11°58′S, 71°18′W), Oct. 1, 1987 (D. Silva & J. Coddington), 1♀ in USNM.

Litoporus manu, new species
Figures 1226–1230

TYPE: Male holotype from Parque Nacional Manú, Zona Reservada Pakitza (11°56′S, 71°17′W), Dept. Madre de Dios, Peru; 356 m elev., Apr. 24–29, 1991 (D. Silva), in USNM.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Easily distinguished from described congeners by the shape of the male cheliceral apophyses (fig. 1226) and the procursus (figs. 1228, 1230). The MUSM has a very close (undescribed) relative from Peru (Madre de Dios, 15 km E Puerto Maldonado), which has the lateral apophyses on the male chelicerae much more proximal, among other minor differences.

MALE (holotype): Total length 1.5, carapace width 0.77; leg 1: 34.3 (8.9+0.3+7.9 +15.3+1.9), tibia 2: 5.1, tibia 3: 3.5, tibia 4: 4.7; tibia 1 l/d: 98. Habitus and prosoma shape as typical for genus (cf. figs. 1195–1197). Entire prosoma ochre-yellow, only carapace with thin dark line in thoracic groove; distance PME-ALE about 70% of PME diameter. Chelicerae with two pairs of characteristic apophyses (fig. 1226). Palps as in fig. 1227, with distinct retrolateral apophysis on coxa, proximal retrolateral apophysis and large distal bulge on femur; procursus with two strong hairs dorsally and hook-shaped black tip (figs. 1228–1230). Legs slightly darker than prosoma, tips of femora and tibiae and second half of metatarsi whitish; without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 1.7%; tarsus 1 with ~ 30 pseudosegments. Opisthosoma shape as in *L. dimona* (cf. fig. 1181), monochromous ochre-gray.

FEMALE: Unknown. (The male holotype is accompanied by a female, but this is quite certainly *L. pakitza.*)

DISTRIBUTION: Known only from southern Peru (Madre de Dios).

MATERIAL EXAMINED: PERU: *Madre de Dios*: Zona Reservada Pakitza: type above; Pakitza, Puesto de Vigilancia (11°58′S, 71°18′W), Sept. 28, 1987 (D. Silva & J. Coddington), 1♂ in USNM; Pakitza, Rio Manú (12°07′S, 70°58′W), 250 m elev., Sept. 22, 1988 (T. Erwin & B. D. Farrel), 1♂ in USNM.

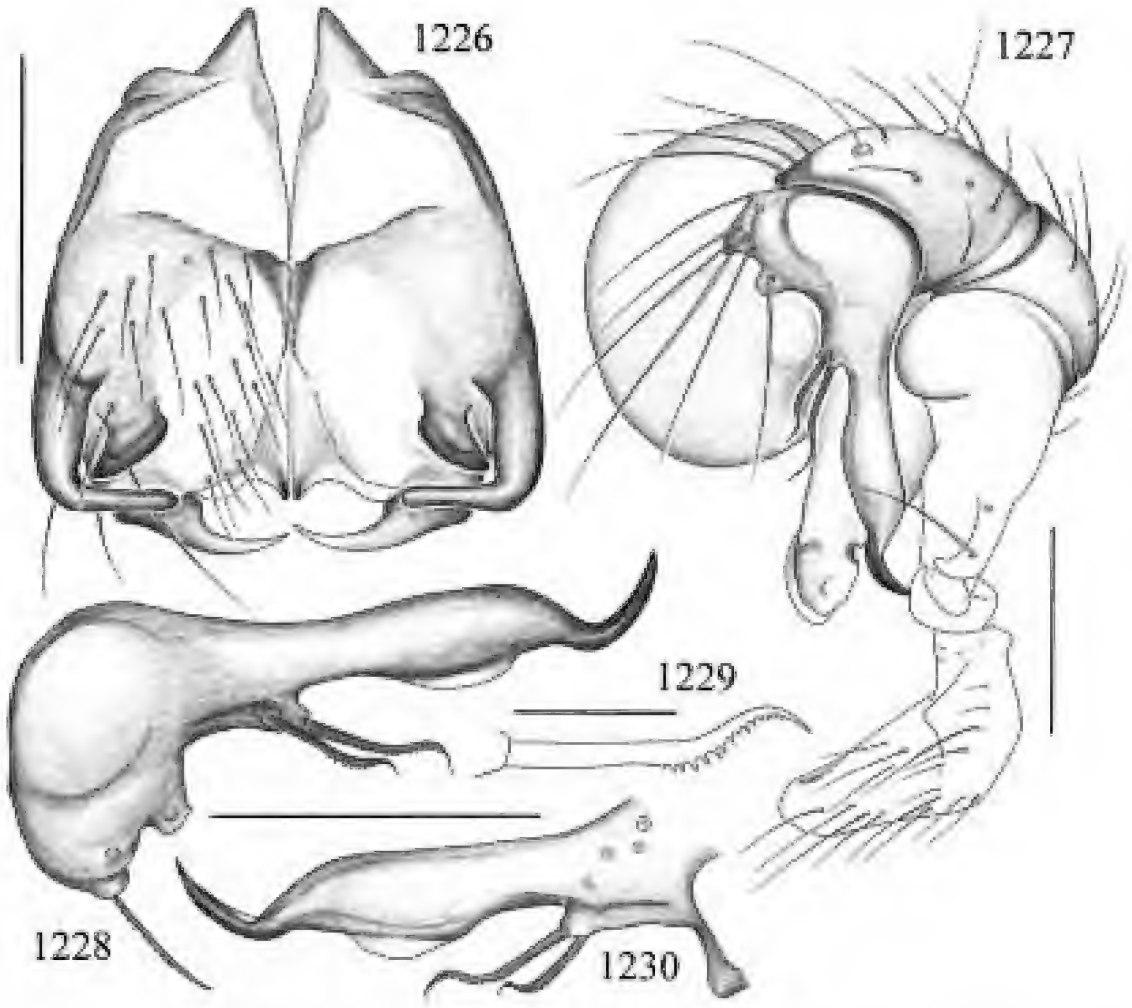
OTAVALOA, NEW GENUS

TYPE SPECIES: *Otavaloa angotero*, new species.

ETYMOLOGY: The generic name honors the Otavalo people of Ecuador, who are known widely throughout Ecuador and Peru for their woolen textiles, and who have maintained a powerful sense of identity. Gender feminine.

DIAGNOSIS: Small to medium-sized (total length 1.6–2.5 mm), eight-eyed pholcids with long legs; distinguished from similar genera (especially *Litoporus*) by the unique apophyses at the bases of the laminae in the male chelicerae (fig. 1232; absent only in *O. pasco*, n. sp.), the dorsally bent procursus, and the scape in the female epigynum (figs. 1240, 1247, 1251, 1257).

DESCRIPTION: Total length ~ 1.6–2.5 mm. Carapace relatively flat, but with distinct thoracic groove, ocular area moderately elevated, with eight eyes, AME the smallest; distance PME-ALE about 50–70% of PME diameter. Male clypeus unmodified. Male chelicerae with pair of distinctive apophyses at the bases of the laminae (fig. 1232; absent in *O. pasco*, n. sp.), without stridulatory ridges laterally. Male sternum without humps. Male palpal coxa with retrolateral apophysis (poorly developed in *O. pasco*), femur with retrolateral apophysis proximally, enlarged distally, tibia relatively small in relation to femur (fig. 1236), procursus strongly bent dorsally (figs. 1236, 1244, 1255); bulb simple, but with various membranous elements distally on embolar division. Tarsal organ exposed (examined: *O. angotero*). Legs long and thin



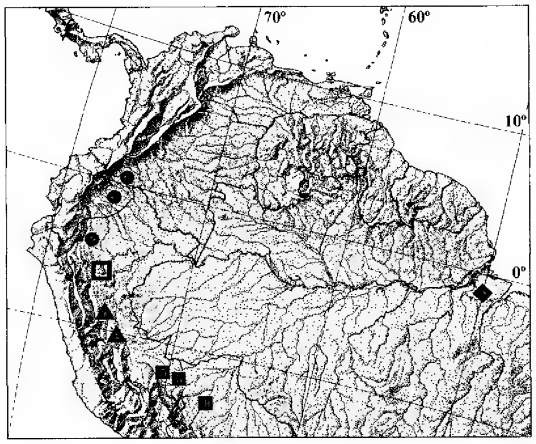
Figs. 1226–1230. *Litoporus manu*, n. sp., male. **1226**. Chelicerae, frontal view. **1227**. Left palp, retrolateral view. **1228**. Left cymbium with procursus, retrolateral view. **1229**. Modified hair dorsally on procursus. **1230**. Left procursus, prolateral view. Scale lines: 0.2 mm (1226–1228, 1230), 0.05 mm (1229).

(leg 1 about 20 × body length; tibia 1 l/d usually ~ 50–70; in *O. pasco* 115!), without dark rings but with light tips distally on femora and tibiae; leg formula 1243; legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 very proximal (at ~ 1–4%); tarsus with > 20 pseudosegments (maybe up to 40, but they are difficult to count proximally). Opisthosoma often greenish, slightly higher and angular behind, usually with large dark smudges dorsally (fig. 1231). Male gonopore without epiandrous spigots (examined: *O. angotero*). ALS with only one piriform gland spigot each (examined: *O. angotero*), other spinnerets typical for family.

Sexual dimorphism slight; legs of females with dark rings on femora and tibiae (subdistally); epigynum with distinct scape.

MONOPHYLY: Four of the five species described below share the unique male cheliceral apophyses (fig. 1232). Probably all share the epigynal scape (the female of *O. otanabe*, n. sp., is unknown). The scape of *Litoporus uncatus* with its distal pocket (fig. 1210) is herein considered to have evolved convergently.

GENERIC RELATIONSHIPS: *Otavaloa* is sim-



Map 9. Known distribution of the genus *Otavaloa*, n. gen.: *O. angotero*, n. sp. (circles); *O. otanabe*, n. sp. (light square); *O. pasco*, n. sp. (triangles); *O. piro*, n. sp. (dark squares); *O. lisei*, n. sp. (diamond).

ilar in habitus to *Litoporus* (prosoma shape, long legs, no dark rings on male legs but segments with light tips), but in *Litoporus* the genitalia are very different (palpal femur with ventral bulge, procursus simpler and not conspicuously curved, chelicerae with different type of armature). *Otavaloa* clearly is part of the New World clade of pholcids (retrolateral coxal apophysis, thoracic groove, large distance PME-ALE, exposed tarsal organ, epiandrous spigots absent, ALS piriform gland spigots reduced to one), but apart from that, the phylogenetic relationships are obscure.

DISTRIBUTION: Widely distributed in South America, ranging from northern Bolivia to southern Colombia and northeastern Brazil; possibly restricted to lowland forests (map 9).

COMPOSITION: The genus as construed here includes five named species, all of which are here newly described. Apart from that, I have seen numerous undescribed species, mostly from Ecuador, Peru, and Bolivia (in MUSM, MCN, CAS).

Otavaloa angotero, new species

Figures 1231–1242

TYPES: Male holotype, 2♂ paratypes from Jatun Sacha, Napo, Ecuador; Sept. 1996 (R. L. Rodriguez), in AMNH.

ETYMOLOGY: The specific name is a noun in apposition honoring the Angotero, a highly assimilated group of Indians living in Amazonian Peru and southern Colombia.

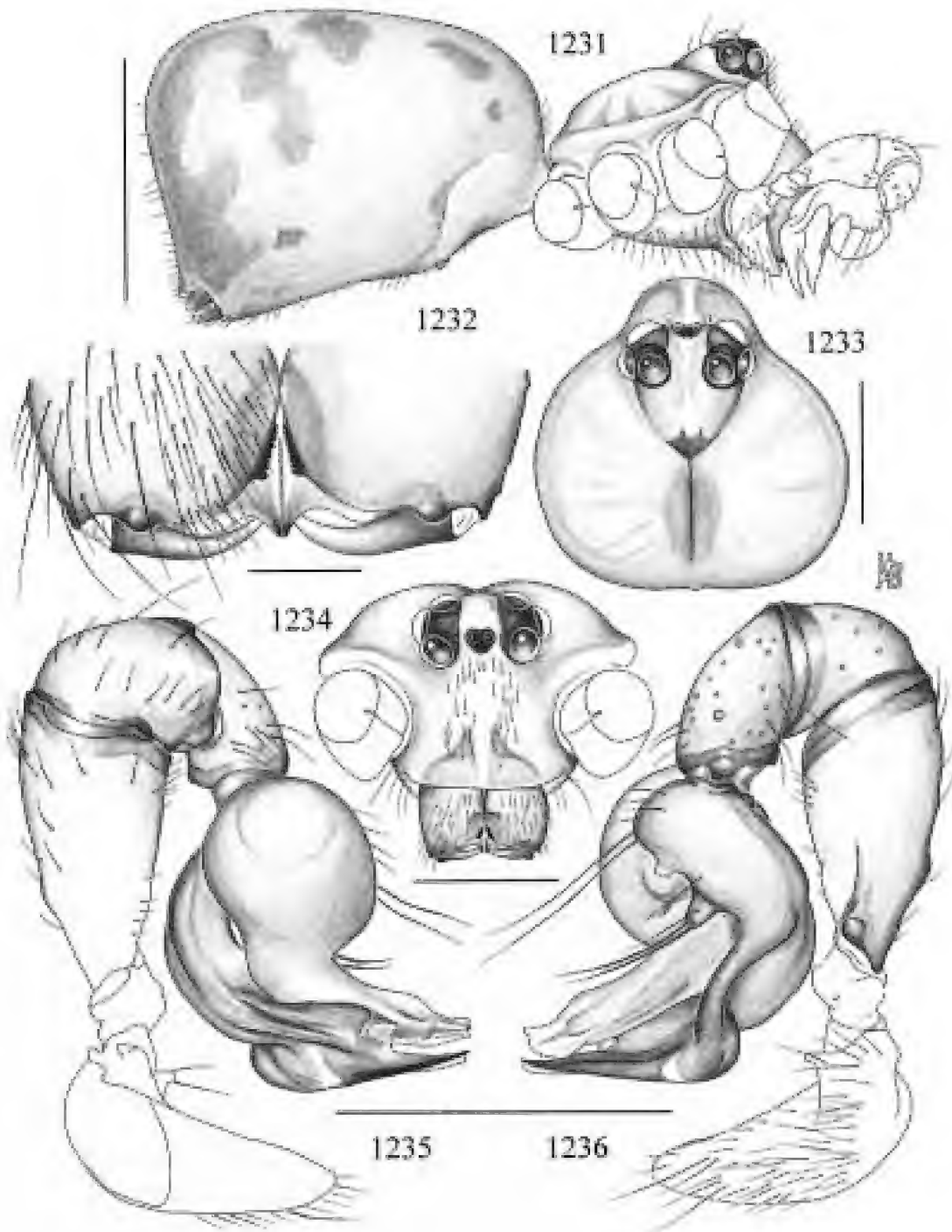
DIAGNOSIS: Distinguished from congeners by the shape of the procursus (figs. 1235–1236, 1238–1239).

MALE (holotype): Total length 2.5, carapace width 1.1; leg 1 missing, tibia 2: 5.0, tibia 3 missing, tibia 4: 4.3. Habitus as in fig. 1231. Carapace relatively flat, but with distinct thoracic groove, pale whitish with brown stripe (figs. 1233–1234), eight eyes on pale whitish, moderately elevated ocular area; distance PME-ALE about 70% of PME diameter. Clypeus and sternum pale whitish, labium brown. Chelicerae light brown, with sclerotized ridge at basis of cheliceral laminae (fig. 1232). Palps as in figs. 1235–1236; light ochre to light brown, distal sclerites black; coxa with distinct retrolateral apophysis, femur with proximal retrolateral apophysis, widened distally, procursus distinctively curved, with relatively complicated tip (figs. 1235–1236, 1238–1239), palpal tarsal organ exposed. Legs brown, tibiae distally whitish; all legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 (paratype) at 4%; tarsus 1 (paratype) with over 20 pseudosegments. Opisthosoma light bluish-green, with darker spots dorsally, brown rectangular genital plate, gonopore without epiandrous spigots. ALS with only one piriform gland spigot each, other spinnerets typical for family.

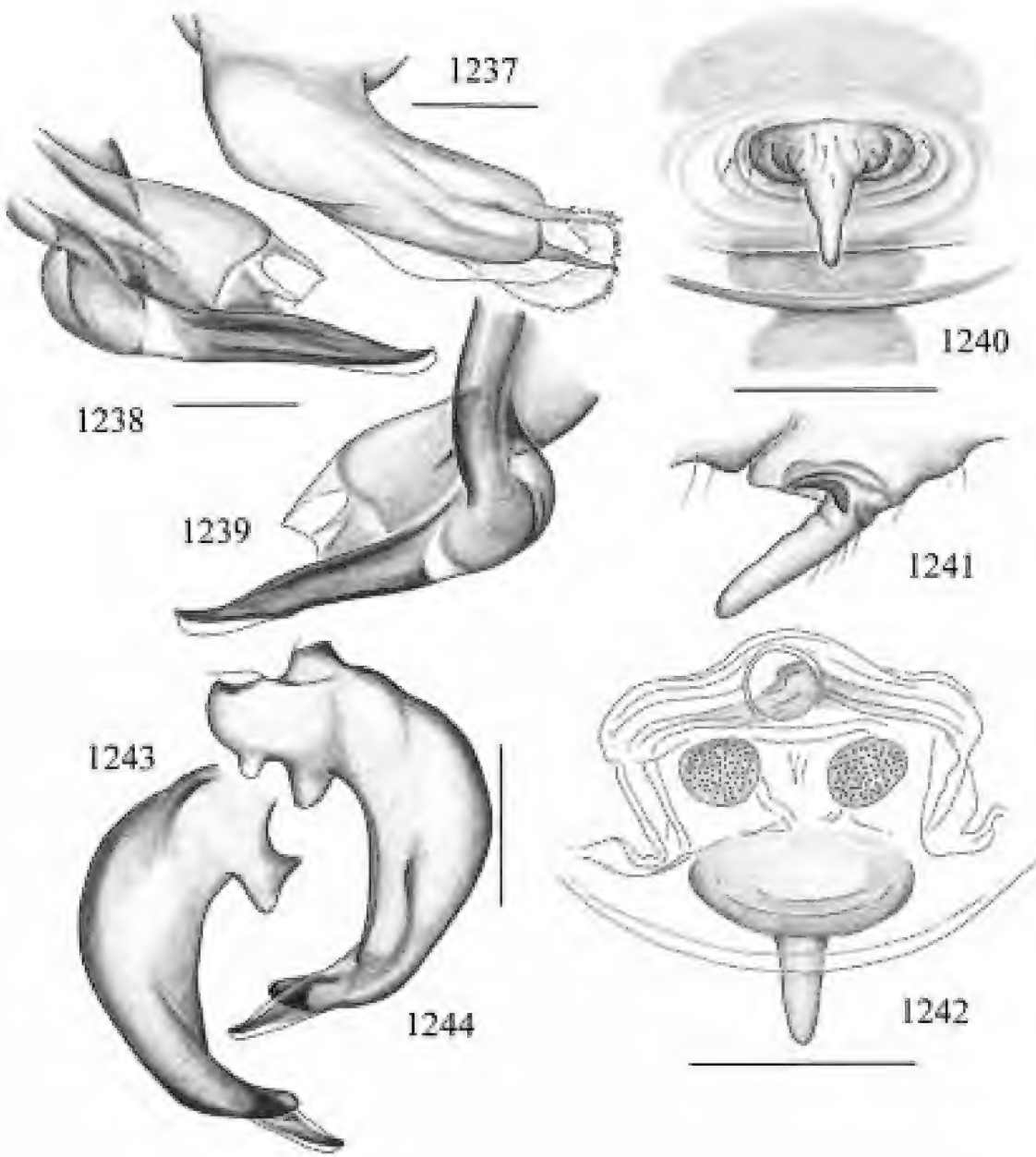
VARIATION: Measurements of a male from Putumayo: Leg 1: 24.0 (6.4+0.3+5.6+10.4 +1.3), tibia 4: 5.2; tibia 1 l/d: 52. Some males have light ochre legs (recently molted?), one of the Peruvian males has a pale grayish opisthosoma.

FEMALE (Colombia: near Puerto Asis): Total length 2.5, tibia 1: 6.7. In general similar to male, but prosoma without darker median band, legs with dark rings (femora and tibiae subdistally) followed by whitish tips. Epigynum light brown, with distinctive scape (figs. 1240–1241), internal genitalia with pair of round pore plates (fig. 1242).

DISTRIBUTION: Known from southern Colombia, Ecuador, and northern Peru (map 9).



Figs. 1231–1236. *Otavaloa angotero*, n. gen., n. sp., male. **1231**. Habitus, lateral view. **1232**. Distal part of chelicerae, frontal view. **1233–1234**. Prosoma, dorsal and frontal views. **1235**. Left palp, prolateral view. **1236**. Left palp, retrolateral view. Scale lines: 1.0 mm (1231), 0.5 mm (1233–1236), 0.1 mm (1232).



Figs. 1237–1244. *Otavaloa* spp. 1237–1242. *O. angotero*, n. gen., n. sp. **1237**. Embolar division of left bulb, ~ prolateral view. **1238**. Left procursus tip, prolateral view. **1239**. Left procursus tip, retrolateral view. **1240**. Epigynum, ventral view. **1241**. Epigynum, lateral view. **1242**. Epigynum, dorsal view. 1243–1244. *O. otanabe*, n. gen., n. sp., male holotype. **1243**. Left procursus, prolateral view. **1244**. Left procursus, retrolateral view. Scale lines: 0.2 mm (1240–1244), 0.1 mm (1237–1239).

MATERIAL EXAMINED: ECUADOR: *Napo*: Jatun Sacha: types above. COLOMBIA: *Putumayo:* Rio Putumayo, near Pto Asis, no date (W. G. Eberhard), 2♂ 1♀ in MCZ. PERU: *Amazonas:* Rio Alto Marañon, between Rios Cempa and Nieva (~ 4°40′S, 78°00′W), Sept. 10–24, 1924 (Klug), 2♂ in AMNH.

Otavaloa otanabe, new species

Figures 1243–1244

TYPE: Male holotype from "Mishquiyacu," 20 km NE Moyobamba, Dept. San Martín, Peru; Aug. 1947 (F. Woytkowski), in AMNH.

ETYMOLOGY: The species name is a noun in apposition honoring the Muniche (also called Otanabe), an Indian tribe in the Amazonian jungle of north central Peru. By the 1980s there were only about 10 people left who still understood the aboriginal language.

DIAGNOSIS: Closely related to *O. angotero* and *O. piro*; distinguished by the shape of the procursus (figs. 1243–1244).

MALE (holotype): Total length 2.4, carapace width 1.2; leg 1 missing, tibia 2: 4.5, tibia 3: 3.0, tibia 4: 4.0. Habitus and prosoma shape as in *O. angotero* (cf. figs. 1231, 1233–1234); distance PME-ALE about 70% of PME diameter. Entire prosoma orange to light brown, chelicerae as in *O. angotero* (cf. fig. 1232), palps in general as in *O. angotero* (cf. figs. 1235–1236), with distinctive procursus (figs. 1243–1244), bulb apparently identical to *O. angotero* (cf. fig. 1237). Legs light brown, tibiae distally whitish; all legs without spines, without curved and vertical hairs. Opisthosoma pale greenish-ochre, with darker greenish spots dorsally, orange genital plate, dark stripe behind genital plate halfway to spinnerets.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality (map 9).

MATERIAL EXAMINED: PERU: *San Martín:* type above.

Otavaloa piro, new species

Figures 1245–1248

TYPES: Male holotype, 1♂ 2♀ paratypes from Zona Reservada Pakitza (11°56′S, 71°17′W), Dept. Madre de Dios, Peru; 356 m elev., May 3, 1991 (D. Silva), in MUSM.

ETYMOLOGY: The specific name is a noun in apposition honoring the Píro, an interfluvial people living at the junction of the Brazilian-Bolivian-Peruvian borders. They were devastated by the rubber boom around 1900, and are today rapidly being acculturated.

DIAGNOSIS: Distinguished from congeners by the shape of the procursus (figs. 1245–1246), and the narrow epigynal scape (fig. 1247).

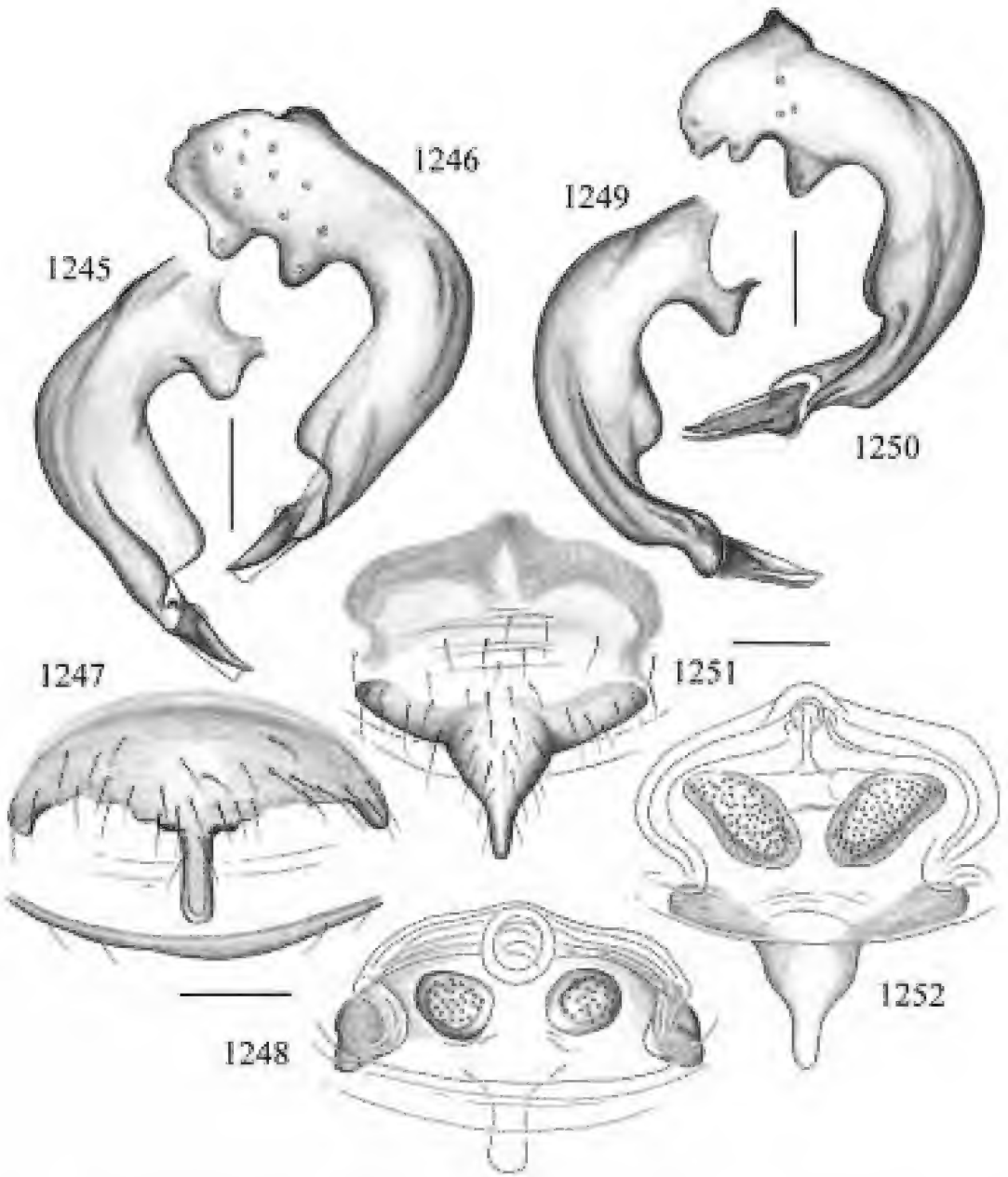
MALE (holotype): Total length 2.4, carapace width 1.1; leg 1: 34.3 (8.1+0.4+7.7 +15.7+2.4), tibia 2: 4.6, tibia 3: 3.1, tibia 4: 4.1; tibia 1 l/d: 68. Habitus and prosoma shape as in *O. angotero* (cf. figs. 1231, 1233–1234); distance PME-ALE about 70% of PME diameter. Carapace pale ochre with brown median line; ocular area and clypeus pale ochre, sternum pale whitish, labium brown. Chelicerae light brown, with sclerotized ridge at basis of cheliceral laminae as in *O. angotero* (cf. fig. 1232). Palps in general as in *O. angotero* (cf. figs. 1235–1236), light ochre to light brown, distal sclerites black; procursus with distinctive tip (figs. 1245–1246). Legs brown, tibiae distally whitish; all legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 with over 20 pseudosegments (difficult to count). Opisthosoma shape as in *O. angotero* (cf. fig. 1231), pale greenish-gray, with large darker spots dorsally, brown rectangular genital plate.

FEMALE: Tibia 1 in 4 females: 5.6, 5.9, 6.0, 6.4. In general very similar to male, but legs with dark rings (femora and tibiae subdistally) followed by whitish tips. Epigynum light brown, with distinctive narrow scape (fig. 1247), internal genitalia with pair of round (globular?) pore "plates" (fig. 1248).

VARIATION: The dark pattern in front of the epigynum varies widely. Apart from that, there is only slight variation in the length of the epigynal scape.

DISTRIBUTION: Known from southern Peru (Madre de Dios) and northern Bolivia (Beni) (map 9).

MATERIAL EXAMINED: PERU: *Madre de Dios*: Zona Reservada Pakitza: types above; same locality, same collector: May 2–5, 1991, 2♂ 2♀ in MUSM; Apr. 21–29 and Sept. 26–Oct. 19, 1991, 13♂ 17♀ (5 vials) in USNM; same locality, Sept. 28–Oct. 10, 1987 (D. Silva & J. Coddington), 4♂ 9♀ (7 vials) in USNM; Pakitza, Rio Manú (12°07′S, 70°58′W), 250 m elev., Sept. 22, 1988 (T. Erwin & B. D. Farrel), 1♂ in USNM; 5 mi upstream Pakitza, Quebrada El Pachira, Oct. 4, 1987 (D. Silva & J. Coddington), 1♂ 1♀ in USNM; Zona Reservada



Figs. 1245–1252. *Otavaloa* spp. 1245–1248. *O. piro*, n. gen., n. sp. **1245**. Left procursus, prolateral view. **1246**. Left procursus with cymbium, retrolateral view. **1247**. Epigynum, ventral view. **1248**. Epigynum, dorsal view. 1249–1252. *O. lisei*, n. gen., n. sp. **1249**. Left procursus, prolateral view. **1250**. Left procursus with cymbium, retrolateral view. **1251**. Epigynum, ventral view. **1252**. Epigynum, dorsal view. Scale lines: 0.1 mm.

Tambopata (12°50′S, 69°17′W), 290 m elev., June 5–7, 1988 (J. Coddington), 1♂ 3♀ (2 vials) in USNM; 15 km E Puerto Maldonado (12°33′S, 69°03′W), 200 m elev., Feb. 22–Mar. 6, 1990 (D. Silva), 5♂ 3♀ in MUSM. BOLIVIA: *Beni*: Estacion Biologica Beni, Sept. 6–14, 1987 (S. Larcher & J. Coddington), 2♂ 1♀ 2 juveniles (2 vials) in USNM;

16.8 mi SW Yucumo (~ 15°23′S, 66°59′W), ~ 500 m elev., Nov. 15–19, 1989 (J. Coddington, C. Griswold, D. Silva, S. Larcher, E. Peñaranda), ~ 22♂ 20♀ (3 vials) in USNM.

Otavaloa lisei, new species

Figures 1249–1252

TYPES: Male holotype, 1♂ 2♀ paratypes from Caxiuanã, Melgaço, Pará, Brazil; Aug. 11, 1996 (A. A. Lise "et al."), in MCP (9428, 9422).

ETYMOLOGY: Named for the principal collector of the type material.

DIAGNOSIS: Distinguished from congeners by the shape of the procursus (figs. 1249–1250) and the shape of the epigynal scape (fig. 1251).

MALE (holotype): Total length 2.3, carapace width 1.0; leg 1: 33.6 (8.1+0.4+7.7 +14.7+2.7), tibia 2: 4.7, tibia 3: 3.1, tibia 4 missing; tibia 1 l/d: 68. Habitus and prosoma shape as in *O. angotero* (cf. figs. 1231, 1233–1234), distance PME-ALE about 75% of PME diameter. Carapace pale ochre with brown median line; ocular area and clypeus pale ochre, sternum pale whitish, labium brown. Chelicerae light brown, with sclerotized ridge at basis of cheliceral laminae as in *O. angotero* (cf. fig. 1232). Palps in general as in *O. angotero* (cf. figs. 1235–1236), light ochre to light brown, distal sclerites black; procursus with distinctive, relatively complicated tip (figs. 1249–1250). Legs brown, tibiae distally whitish; all legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 with up to 40 pseudosegments (difficult to count). Opisthosoma shape as in *O. angotero* (cf. fig. 1231), pale greenish, with large darker spots dorsally.

VARIATION: Tibia 1 in male paratype: 7.6. Legs of paratype not brown but pale ochre as carapace. (This male is probably more recently molted.)

FEMALE (paratypes): In general very similar to male, but legs with dark rings (femora and tibiae subdistally) followed by whitish tips. Tibia 1: 5.6 (missing in other female). Epigynum light brown, with distinctive scape (fig. 1251), large greenish area frontally (fig. 1251; this area is smaller and less distinct in other female), internal genitalia with pair of oval (spherical?) pore "plates" (fig. 1252).

DISTRIBUTION: Known only from type locality (map 9).

MATERIAL EXAMINED: BRAZIL: *Pará*: Caxiuanã, Melgaço: types above.

Otavaloa pasco, new species

Figures 1253–1258

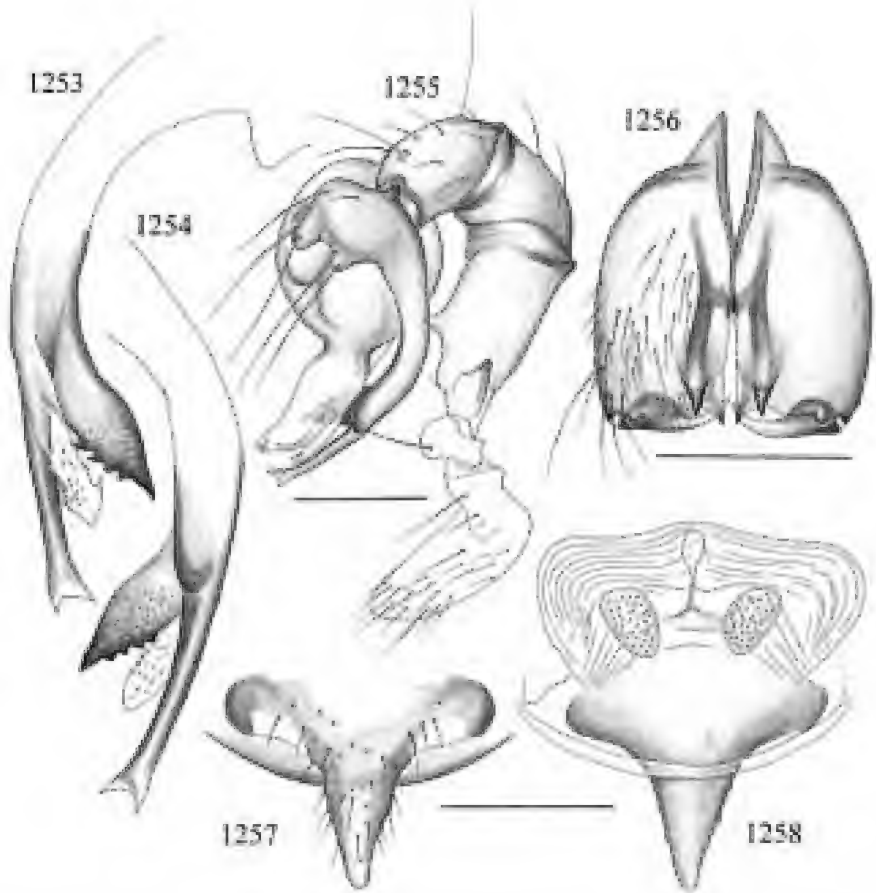
TYPES: Male holotype, 1♂ 3♀ paratypes from Huancabamba, Quebrada Castillo, NW Iscozacin (10°10′S, 75°15′W), Dept. Pasco, Peru; 345 m elev., Sept. 7, 1988 (D. Silva), in MUSM.

ETYMOLOGY: Named for the Peruvian state Pasco. The specific name is a noun in apposition.

DIAGNOSIS: Easily distinguished from congeners by the shape of the frontal apophyses on the male chelicerae (fig. 1256) and by the shape of the procursus (figs. 1253–1254).

MALE (holotype): Total length 1.65, carapace width 0.7; leg 1: 34.6 (8.4+0.3+8.0 +15.6+2.3), tibia 2: 5.2, tibia 3: 3.2, tibia 4: 4.5; tibia 1 l/d: 115. Habitus and prosoma shape as in *O. angotero* (cf. figs. 1231, 1233–1234), entire prosoma light ochre-yellow; distance PME-ALE about 50% of PME diameter. Sternum whitish, without humps. Chelicerae with pair of brown frontal stripes and pair of blackish apophyses. Palps light ochre, only distally on procursus darker; coxa with retrolateral groove rather than distinct apophysis, femur with proximal retrolateral apophysis and ventral apophysis (fig. 1255), procursus widely curved, with characteristic dorsal apophysis and transparent projection (figs. 1253–1254). Legs ochre-yellow, distal tips of femora and tibiae whitish; all legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 1.2%; tarsus 1 with ~ 30 pseudosegments. Opisthosoma pale greenish-gray, almost invisible large darker spots dorsally and laterally.

FEMALE (paratypes): Tibia 1 (N = 3) 6.0–6.3. In general very similar to male, but legs with dark rings (femora and tibiae subdistally) followed by whitish tips. Epigynum light brown, with distinctive scape (fig. 1257), in-



Figs. 1253–1258. *Otavaloa pasco*, n. gen., n. sp. **1253**. Left procursus, prolateral view. **1254**. Left procursus, retrolateral view. **1255**. Left palp, retrolateral view. **1256**. Male chelicerae, frontal view. **1257**. Epigynum, ventral view. **1258**. Epigynum, dorsal view. Scale lines: 0.2 mm (1255–1258).

ternal genitalia with pair of oval pore plates (fig. 1258).

VARIATION: Tibia 1 in 5 males: 7.2–8.3 ($\bar{x}$ = 7.7). Some specimens had quite distinct dark spots on the opisthosoma, as shown in *O. angotero* (cf. fig. 1231).

DISTRIBUTION: Known only from central Peru (Pasco, Huánuco) (map 9).

MATERIAL EXAMINED: PERU: *Pasco*: Huancabamba: types above; same locality, same collector: Sept. 9, 1988 (2 vials), 4♂ 2♀ 2 juveniles in MUSM; *Huánuco*: Tingo Maria, Oct. 21, 1946 (J. C. Pallister), 1♂ in AMNH.

TEUIA, NEW GENUS

TYPE SPECIES: *Teuia beckeri*, new species.

ETYMOLOGY: The generic name honors the Kaiová Indians (also called Teui), a group of Amerindians who number more than 1000 people scattered in villages and government Indian posts throughout southern Brazil. They are thoroughly integrated into neo-Brazilian society. Gender feminine.

DIAGNOSIS/DESCRIPTION: See diagnosis and description of single known species below.

GENERIC RELATIONSHIPS: The general shape of the male palp (huge femur, relatively small tibia) is similar to some representatives of *Mesabolivar* (e.g., *M. huambisa*, *locono*; see figs. 742, 753) and *Otavaloa* (e.g., *O. angotero*; see fig. 1236). Otherwise, the phylogenetic position is obscure (apart from the inclusion in the New World clade: male palpal coxa with retrolateral apophysis, large distance PME-ALE).

DISTRIBUTION: Known only from type locality in southern Brazil.

Teuia beckeri, new species

Figures 1259–1264

TYPES: Male holotype, 1♀ paratype from São Leopoldo, Rio Grande do Sul, Brazil, Nov. 8, 1974 (C. J. Becker), in MCN (2357).

ETYMOLOGY: Named for the collector of the type material.

DIAGNOSIS: Eight-eyed pholcid with globular opisthosoma and relatively long legs; distinguished from all other known pholcids by the massive procursus that is partly wrapped around the embolar division (fig. 1260); also by the two pairs of apophyses on the male chelicerae (fig. 1262).

MALE (holotype): Total length 2.3, carapace width 1.06; leg 1: 17.8 (4.5+0.4+4.7 +7.1+1.1), tibia 2: 3.8, tibia 3: 2.4, tibia 4: 3.5; tibia 1 l/d: 51. Prosoma shape and eye pattern similar to *Mesabolivar togatus* (cf. fig. 853); distance PME-ALE about 90% of PME diameter. Carapace ochre-yellow, with dark median line and spot behind ocular area; ocular area and clypeus slightly darker, sternum light brown with yellowish specks, labium darker. Chelicerae with two pairs of short frontal apophyses (fig. 1262), lateral pair projects forward, median pair faces downward. Palps as in figs. 1259–1260, with distinct retrolateral coxal apophysis, femur very large, proximally with retrolateral protrusion; procursus large and massive, partly wound around embolar division (fig. 1260); bulb simple, with unsclerotized embolar division (fig. 1261). Legs ochre-yellow, without dark or light rings; femora 3 slightly thicker than others; without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 5%; tarsus 1 with ~ 17 pseudosegments. Opisthosoma almost globular, ochre-green, with dark greenish spots; genital plate wide, ochre.

FEMALE (paratype): Total length 2.9, carapace width 1.06; tibia 1: 3.4. Very similar to male, but with dark rings distally on femora; opisthosoma higher than long (2.5 versus 2.0). Epigynum light brown with blackish arch frontally (fig. 1263); internal genitalia as in fig. 1264. (I could not find pore plates.)

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BRAZIL: *Rio Grande do Sul:* São Leopoldo: types above.

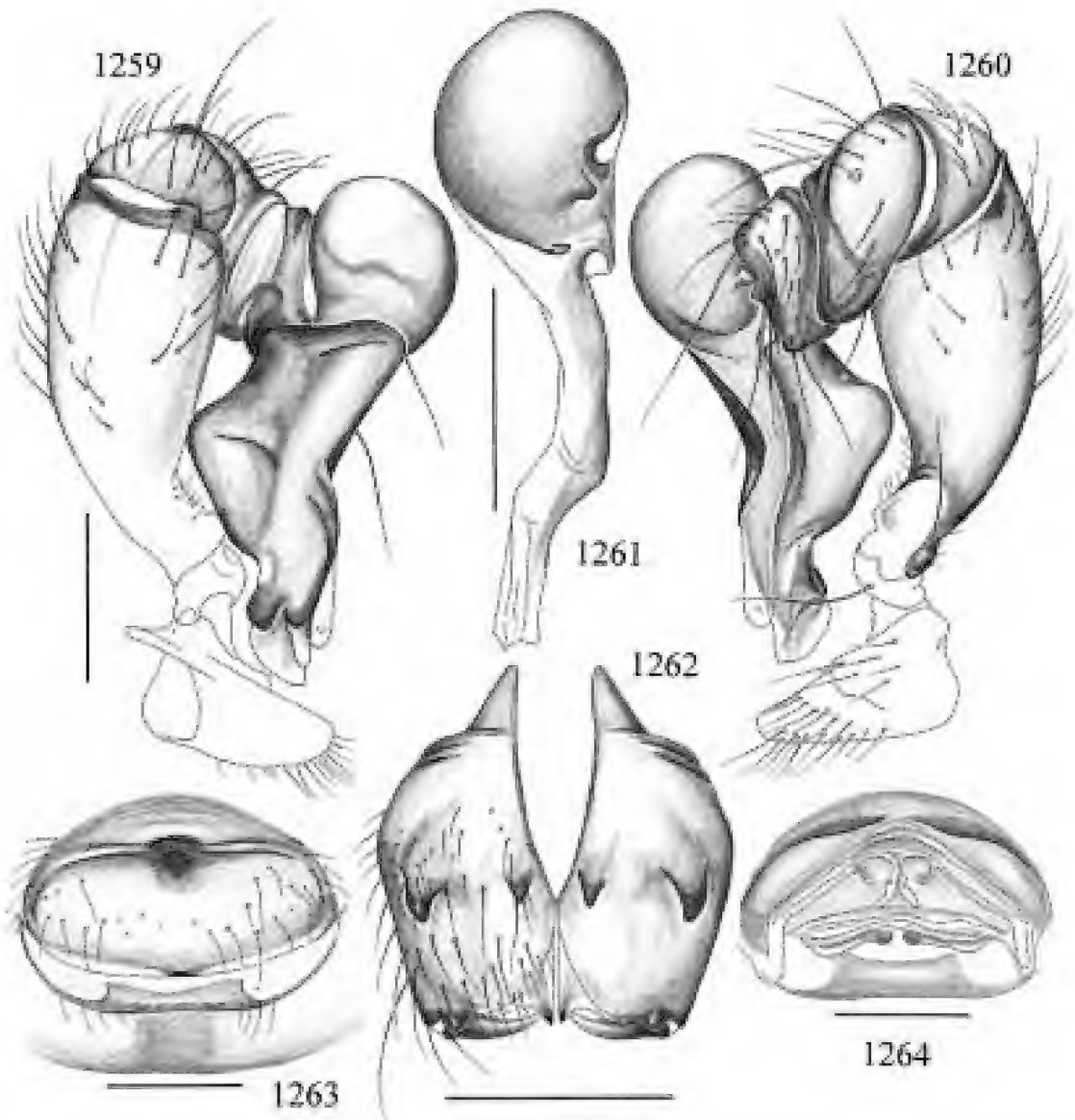
TUPIGEA, NEW GENUS

TYPE SPECIES: *Tupigea lisei*, new species.

ETYMOLOGY: The generic name honors the Tupi and the Gê. The former occupied eastern Brazil at the time of the conquest; their practice of ritualistic exocannibalism gave the Portuguese a moral excuse for exterminating them. The latter occupied the Brazilian coastline before the Tupi, but were driven into the interior by the Tupi before the arrival of the Portuguese. Gender feminine.

DIAGNOSIS: Tiny to small (total length 1.3–1.9 mm), six-eyed (rarely with punctiform AME) pholcids with medium-long legs; globular, rectangular, or triangular (in lateral view) opisthosoma; distinguished from similar genera (*Canaima*, *Blancoa*) by the long male palpal patella (e.g., figs. 1266, 1300; a similar long patella occurs in some otherwise very different ninetine genera: *Ibotyporanga*, *Gertschiola*, *Papiamenta*).

DESCRIPTION: Total length usually ~ 1.3–1.9 mm. Carapace with distinct thoracic groove, ocular area moderately elevated, usually with six eyes, AME absent or reduced to dark specks; distance PME-ALE relatively large (60–80% of PME diameter). Sternum without humps. Male clypeus unmodified. Basal segment of male chelicerae with one of various types of modifications (apophyses, modified hairs), only in *T. nadleri*, n. sp., unmodified; without stridulatory ridges laterally. Male palpal coxa with or without retrolateral apophysis, femur sometimes with pointed and upward-projecting (''pup'') apophysis (with two in *T. maza*, n. sp.; without in *T. lisei*, n. sp., and *paula*, n. sp.), patella almost cylindrical, ventral side unusually long; procursus relatively simple, often bent inward distally, bulb variable. Tarsal organ exposed (examined: *T. lisei*: fig. 83; *T. nadleri*). Legs relatively long (leg 1 about 6–11 × body length; tibia 1 l/d usually 36–78); leg 1 longest, leg 2 longer or about as long as leg 4, leg 3 shortest; legs without spines and curved hairs; usually with vertical hairs on tibiae (at least proximally; miss-



Figs. 1259–1264. *Teuia beckeri* n. gen., n. sp., male holotype and female paratype. **1259**. Left palp, prolateral view. **1260**. Left palp, retrolateral view. **1261**. Left genital bulb, retrolateral view. **1262**. Male chelicerae, frontal view. **1263**. Epigynum, ventral view. **1264**. Epigynum, dorsal view. Scale lines: 0.3 mm.

ing in *T. paula*); retrolateral trichobothrium of tibia 1 at ~ 7–23%; tarsus 1 with ~ 15–25 pseudosegments. Opisthosoma variable in shape, usually about globular, with dark spots dorsally. Male gonopore without epiandrous spigots (examined: *T. nadleri*, *lisei*: fig. 135). ALS with only one piriform gland spigot each (examined: *T. nadleri*, *lisei*; figs. 170–171, 173), other spinnerets typical for family.

Sexual dimorphism slight. Epigynum very simple, variable in shape.

MONOPHYLY: The species included share the ventrally long, cylindrical patella of the male palp. The long patellae in *Ibotyporanga*, *Gertschiola*, and *Papiamenta* are consid-

ered to have evolved convergently. *T. altiventer* (Keyserling) and *T. iguassuensis* (Mello-Leitão) are only known from females and are included tentatively.

GENERIC RELATIONSHIPS: The pointed and upward-projecting apophysis present in several species of the genus is strikingly similar to that in some Central American genera (*Modisimus*, *Anopsicus*, *Bryantina*, *Psilochorus*). This character is otherwise rarely seen in South American pholcids (*Waunana*, *Pisaboa*). The cladistic analysis suggests that this character has evolved at least twice in the New World. Apart from the fact that *Tupigea* is clearly part of the New World clade (thoracic groove, large distance PME-ALE, epiandrous spigots absent, ALS piriform gland spigots reduced to one, exposed tarsal organ), the phylogenetic relationships are obscure. The close relationship with *Blancoa* and *Canaima* proposed by the cladogram in appendix 2 is weakly supported: the reduction of the retrolateral coxal apophysis links *Tupigea* to *Blancoa*, and the reduction of AME links both to *Canaima*.

SPECIFIC RELATIONSHIPS: The type species *T. lisei* shares with *T. teresopolis*, n. sp., and *T. sicki*, n. sp., the low slope of the clypeus (figs. 1272, 1278). All other species have the more common steeper slope.

DISTRIBUTION: So far this genus is only known from southeastern Brazil (Espírito Santo, Rio de Janeiro, Santa Catarina, Rio Grande do Sul). I have seen further undescribed species probably belonging to this genus from Paraná, Rio de Janeiro, and Rio Grande do Sul (mostly in MCN).

COMPOSITION: The genus includes the six newly described species below, and two tentatively assigned species: *T. altiventer* and *T. iguassuensis* (both redescribed below).

Tupigea lisei, new species

Figures 6, 50, 83, 135, 171, 1265–1271

TYPES: Male holotype, 7♂ 11♀ paratypes from Ilha do Arvoredo, Santa Catarina, Brazil; Oct. 15–16, 1993 (A. A. Lise), in MCP (4034).

ETYMOLOGY: Named for the collector of the type material.

DIAGNOSIS: Distinguished from congeners by the single pair of frontal apophyses on the male chelicerae (fig. 1268), the absence of ventral apophyses on the palpal femur, and the shapes of bulb (fig. 1267), procursus (fig. 1269), and epigynum (fig. 1270).

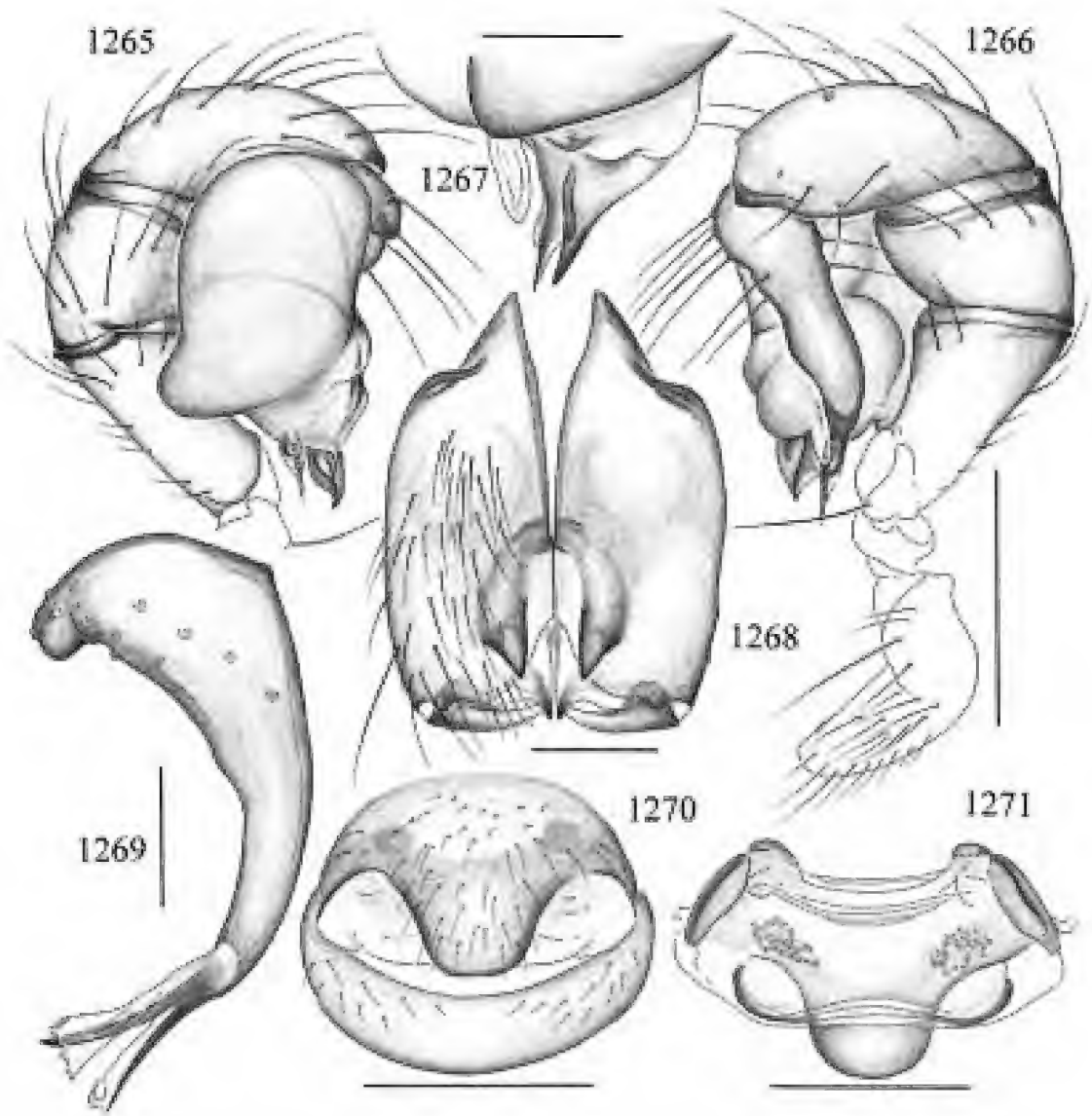
MALE (holotype): Total length 1.9, carapace width 0.7; leg 1: 17.9 (4.7+0.3+4.5 +7.3+1.1), tibia 2: 2.8, tibia 3: 2.0, tibia 4: 2.5; tibia 1 l/d: 67. Habitus and prosoma shape as in *T. teresopolis* (cf. figs. 1272–1273); distance PME-ALE about 70% of PME diameter. Carapace ochre-yellow with darker brown median band; ocular area and clypeus slightly darker than carapace; sternum whitish, no marks. Chelicerae ochre-yellow, with one pair of darker apophyses, and pair of low humps proximally (fig. 1268). Palps as in figs. 1265–1266; ochre-yellow, without retrolateral coxal apophysis, femur without ventral apophysis; procursus distally bent inwards, with pair of distal black spines (fig. 1269; see also fig. 50); bulb distally with two pointed apophyses and transparent projection (fig. 1267; see also fig. 50). Tarsal organ exposed (cf. female: fig. 83). Legs ochre-yellow, patellae and distal tips of tibiae brown; legs without spines and curved hairs, all tibiae with many vertical hairs (not only proximally as in some congeners); retrolateral trichobothrium of tibia 1 at 7%; tarsus 1 with ~ 20 pseudosegments. Opisthosoma shape as in *T. teresopolis* (cf. fig. 1272), pale grayish, with large, indistinct darker spots dorsally. Gonopore without epiandrous spigots (fig. 135); ALS with only one piriform gland spigot each (fig. 171).

VARIATION: Tibia 1 in 8 other males: 4.1–4.8 ($\bar{x}$ = 4.4).

FEMALE: Tibia 1 (N = 12) 2.6–3.1 ($\bar{x}$ = 2.8). In general very similar to male (see also fig. 6), but carapace without brown median band and ocular area not darker. Tips of pedipalps (metatarsus, tarsus) dark brown. Epigynum as shown in fig. 1270, internal genitalia as in fig. 1271.

DISTRIBUTION: Known only from Santa Catarina (Brazil).

MATERIAL EXAMINED: BRAZIL: *Santa Catarina*: Ilha do Arvoredo: types above; Res. Biologica Arvoredo, Oct. 5–6, 1995 (A. A. Lise "et al."), 2♂ 2♀ in MCP (7476).



Figs. 1265–1271. *Tupigea lisei*, n. gen., n. sp. **1265**. Left palp, prolateral view. **1266**. Left palp, retrolateral view. **1267**. Embolar division of left genital bulb, ventral view. **1268**. Male chelicerae, frontal view. **1269**. Left procursus and cymbium, dorsal view. **1270**. Epigynum, ventral view. **1271**. Epigynum, dorsal view. Scale lines: 0.3 mm (1265–1266, 1270–1271), 0.1 mm (1267–1269).

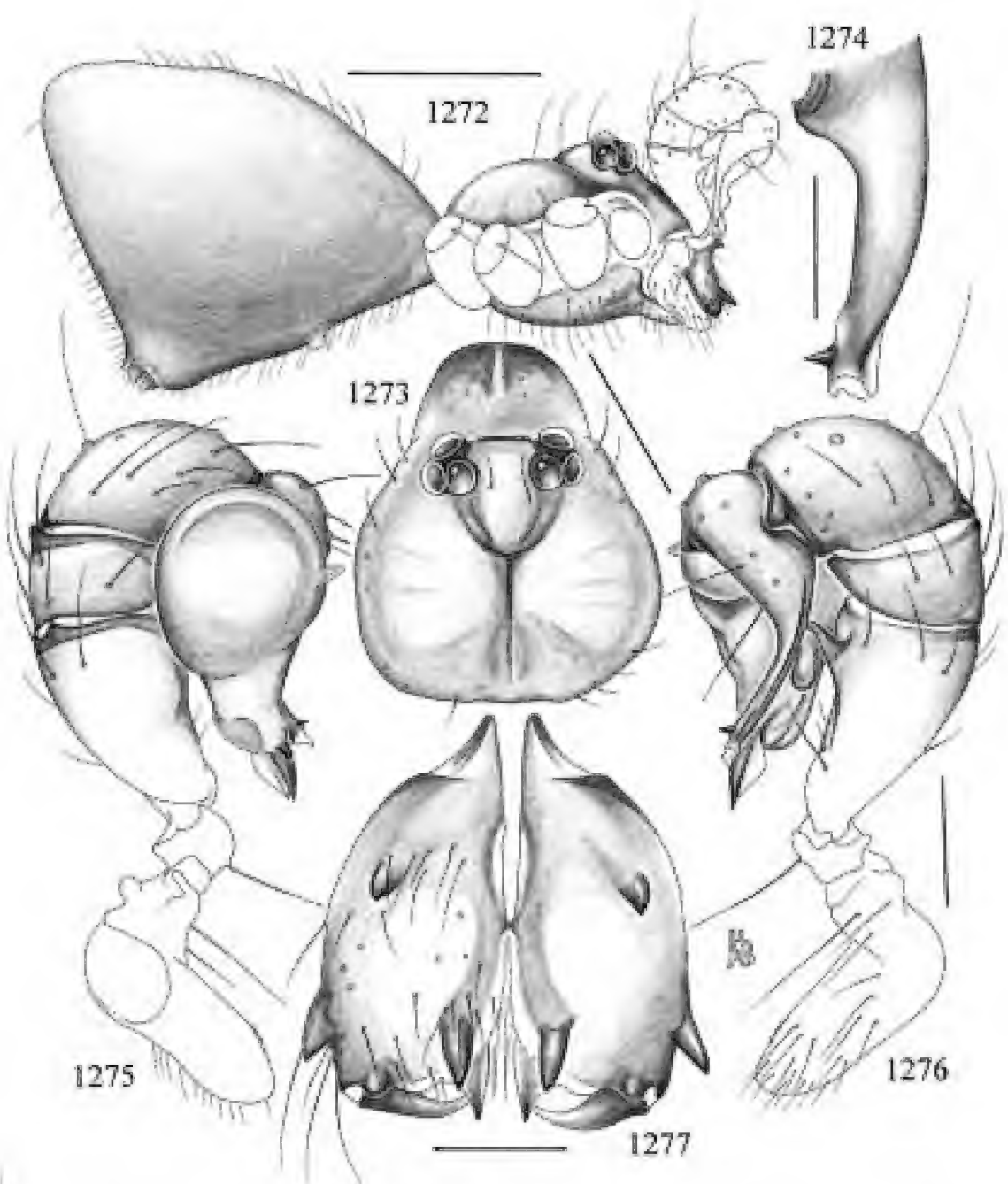
Tupigea teresopolis, new species
Figures 1272–1277

TYPE: Male holotype from Teresópolis, Rio de Janeiro, Brazil; 900–1000 m elev., Mar. 1946 (H. Sick), in AMNH.

ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from congeners by the three pairs of apophyses on the male chelicerae (fig. 1277), and the short black spine retrolaterodorsally on the procursus (fig. 1274).

MALE (holotype): Total length 1.4, carapace width 0.57; leg 1 missing, tibia 2: 3.2, tibia 3: 2.1, tibia 4: 2.8. Habitus and prosoma shape as in figs. 1272–1273. Distance PME-ALE about 60% of PME diameter. Carapace ochre-yellow with brown Y mark behind oc-



Figs. 1272–1277. *Tupigea teresopolis*, n. gen., n. sp., male holotype. **1272**. Habitus, lateral view. **1273**. Prosoma, dorsal view. **1274**. Left procursus, dorsal view. **1275**. Left palp, prolateral view. **1276**. Left palp, retrolateral view. **1277**. Chelicerae, frontal view. Scale lines: 0.5 mm (1272), 0.3 mm (1273), 0.1 mm (1274–1277).

ular area, clypeus brown, sternum light brown with many yellowish spots. Chelicerae light ochre, with three pairs of apophyses with blackish tips, and pair of whitish depressions (fig. 1277). Palps as in figs. 1275–1276, ochre-yellow, without retrolateral coxal apophysis, femur distally with pointed ventral apophysis (fig. 1276); procursus with subdistal black spine (fig. 1274); bulb with two reddish-brown, sclerotized apophyses (fig. 1275). Legs light ochre-yellow, without rings; legs without spines and curved hairs, few vertical hairs proximally on tibiae; tarsus 2 with ~ 16 pseudosegments. Opisthosoma monochromous greenish-yellow.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BRAZIL: *Rio de Janeiro*: Teresópolis: type above.

Tupigea sicki, new species
Figures 1278–1286

TYPES: Male holotype, 1♂ paratype from Teresópolis, Rio de Janeiro, Brazil; 900–1000 m elev., Mar. 1946 (H. Sick), in AMNH.

ETYMOLOGY: Named for the collector of the type material.

DIAGNOSIS: Distinguished from congeners by the numerous cones on the male chelicerae (fig. 1284), and the two distinctive apophyses distally on the bulb (fig. 1286).

MALE (holotype): Total length 1.7 (2.0 if clypeus included), carapace width 0.7; leg 1: 21.0 (5.1+0.3+5.2+8.7+1.7), tibia 2: 3.2, tibia 3: 2.2, tibia 4: 2.7; tibia 1 l/d: 78. Habitus and prosoma shape as in figs. 1278–1281. Entire prosoma ochre-yellow, only under eye triads light brown. AME completely absent; distance PME-ALE about 70% of PME diameter. Thoracic groove distinct. Clypeus almost horizontal (fig. 1278); sternum light ochre-brown. Chelicerae orange to light brown, with blackish cones in front (fig. 1284; I could not certainly say whether all are just cones or whether some—like the large pair near the midline—are actually modified hairs). Palps as in figs. 1282–1283, orange to light brown, small but distinct retrolateral coxal apophysis, femur proximally with round retrolateral apophysis, distally with pointed ventral apophysis (fig. 1283); procursus with simple tip (fig. 1285); bulb with two reddish-brown, sclerotized apophyses, one with tiny teeth and subdistal flap (fig. 1286). Legs light ochre-yellow, with darker patellae and tibia-metatarsus joints; legs without spines and curved hairs, few vertical hairs proximally on tibiae; retrolateral trichobothrium of tibia 1 at 10%; tarsus 1 with ~ 23 pseudosegments. Opisthosoma monochromous ochre-yellow.

VARIATION: Tibia 1 in paratype: 4.9.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BRAZIL: *Rio de Janeiro*: Teresópolis: types above.

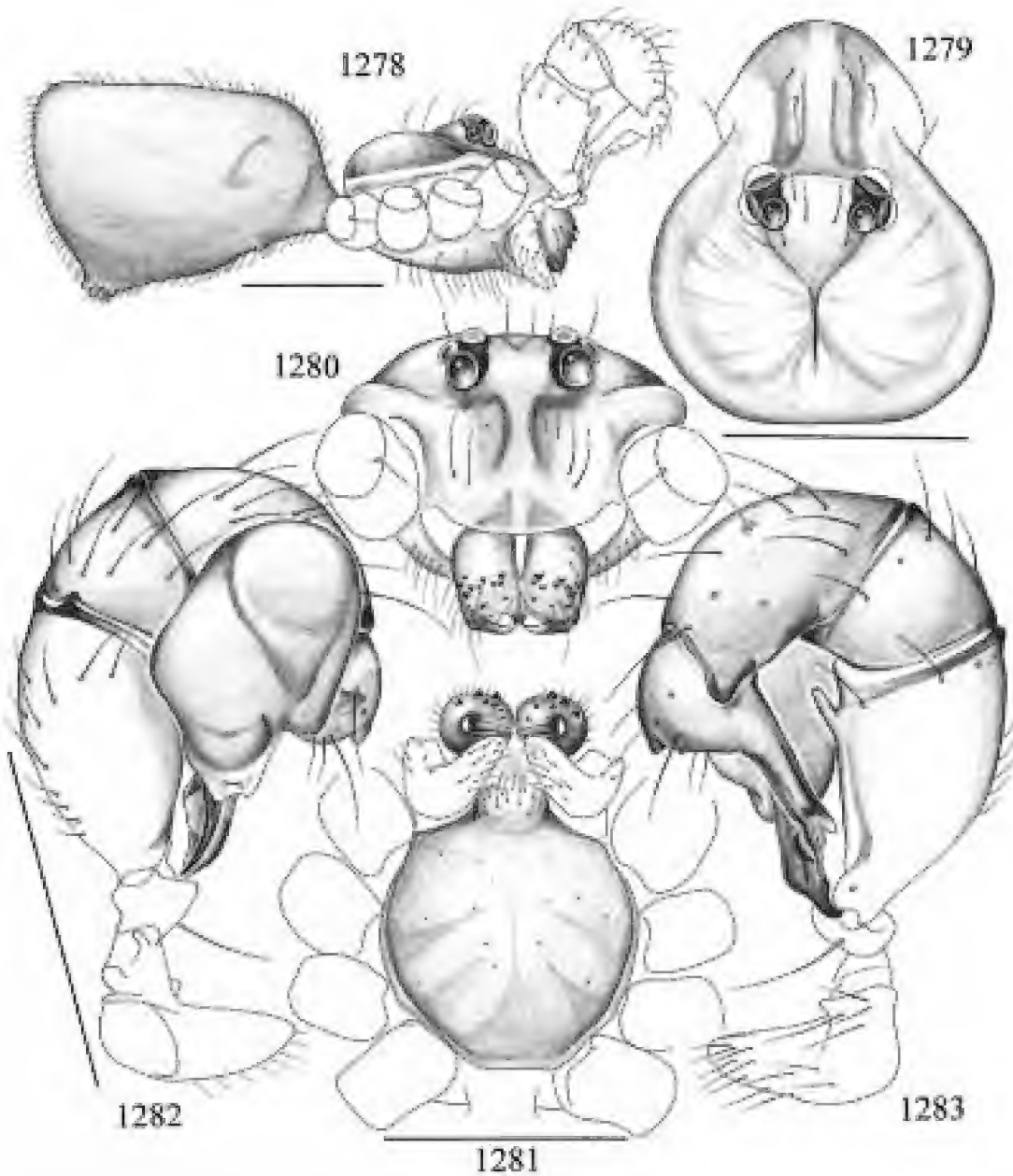
Tupigea nadleri, new species
Figures 170, 173, 1287–1298

TYPES: Male holotype, 2♂ 3♀ paratypes from Santa Teresa, Espírito Santo, Brazil; Jan. 26, 1959 (A. M. Nadler), in AMNH.

ETYMOLOGY: Named for the collector of all the material seen.

DIAGNOSIS: Distinguished from congeners by the unmodified male chelicerae, and the simple sclerotized tip of the procursus with subdistal semitransparent lamina (figs. 1294–1296).

MALE (holotype): Total length 1.3, carapace width 0.57; leg 1: (1.65+1.19+1.68+2.10, tarsus missing), tibia 2 missing, tibia 3: 0.81, tibia 4: 1.06; tibia 1 l/d: 36. Habitus and prosoma shape as in figs. 1287–1289. Carapace light ochre-brown, with darker spot posteriorly, with distinct thoracic groove; ocular area with brown margins, AME reduced to black spot (fig. 1288); distance PME-ALE about 70% of PME diameter. Clypeus with brown markings (fig. 1288); sternum light ochre-brown, wide (fig. 1292). Chelicerae unmodified. Palps without retrolateral coxal apophysis, femur with basal apophyses (ventrally and retrolaterally), and distal (ventrally) apophysis (fig. 1291); procursus ending in simple sclerotized tip, with subdistal semitransparent lamina (figs. 1294–1296); bulb with prolateral flagellum and distal laminae (fig. 1293). Legs ochre-yellow, with darker rings on femora (subdistally), tibiae (proximally and subdistally), and metatarsi (prox-

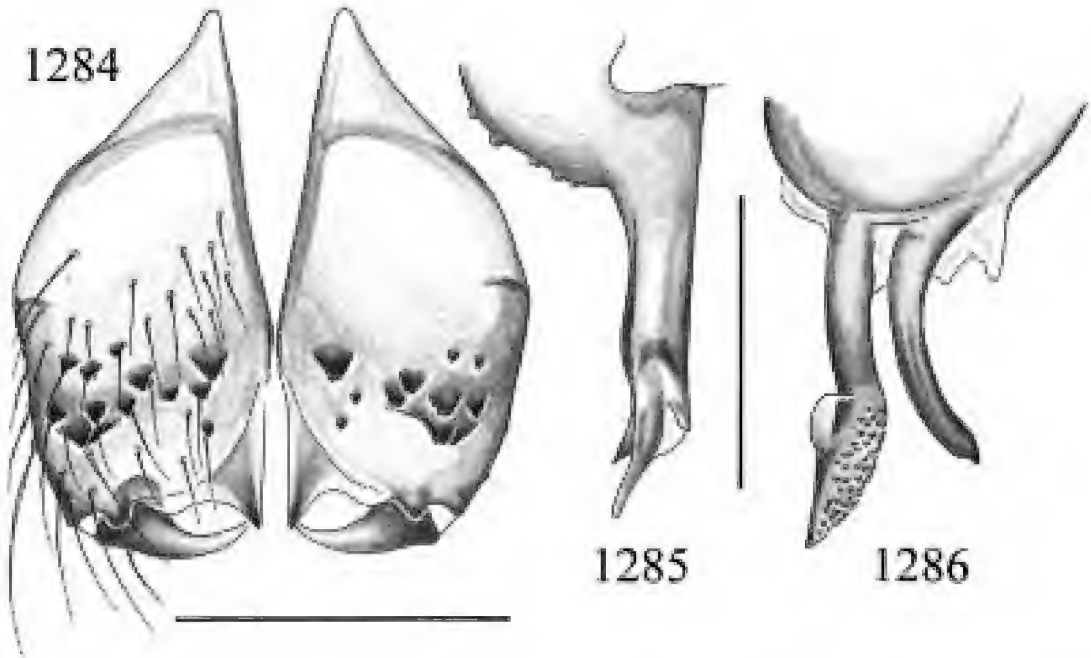


Figs. 1278–1283. *Tupigea sicki*, n. gen., n. sp., male. **1278**. Habitus, lateral view. **1279–1281**. Prosoma, dorsal, frontal, and ventral views. **1282**. Left palp, prolateral view. **1283**. Left palp, retrolateral view. Scale lines: 0.5 mm.

imally, very faint); some vertical hairs on tibiae; without spines and curved hairs; retrolateral trichobothrium of tibia 1 at 23%; tarsus 1 (paratype) with ~ 15 pseudosegments. Opisthosoma gray with large blackish spots dorsally.

VARIATION: Tibia 1 in 2 males from Rio de Janeiro: 1.48, 1.52.

FEMALE (paratype): Total length 1.2; tibia 1: 1.16. In general very similar to male. Epigynum very simple in ventral view (fig. 1297); in dorsal view with pair of transparent



Figs. 1284–1286. *Tupigea sicki*, n. gen., n. sp., male. **1284**. Chelicerae, frontal view. **1285**. Left procursus, retrolateral view. **1286**. Bulbal projections (left bulb), ventral view. Scale lines: 0.2 mm.

globular structures of unknown significance, and valve in two arches (fig. 1298).

DISTRIBUTION: Known from Espírito Santo and Rio de Janeiro (Brazil).

MATERIAL EXAMINED: BRAZIL: *Espírito Santo*: Santa Teresa: types above. *Rio de Janeiro*: Paineiras, Jan. 22, 1959 (A. M. Nadler), 3♂ 1♀ 2 juveniles in AMNH.

Tupigea maza, new species

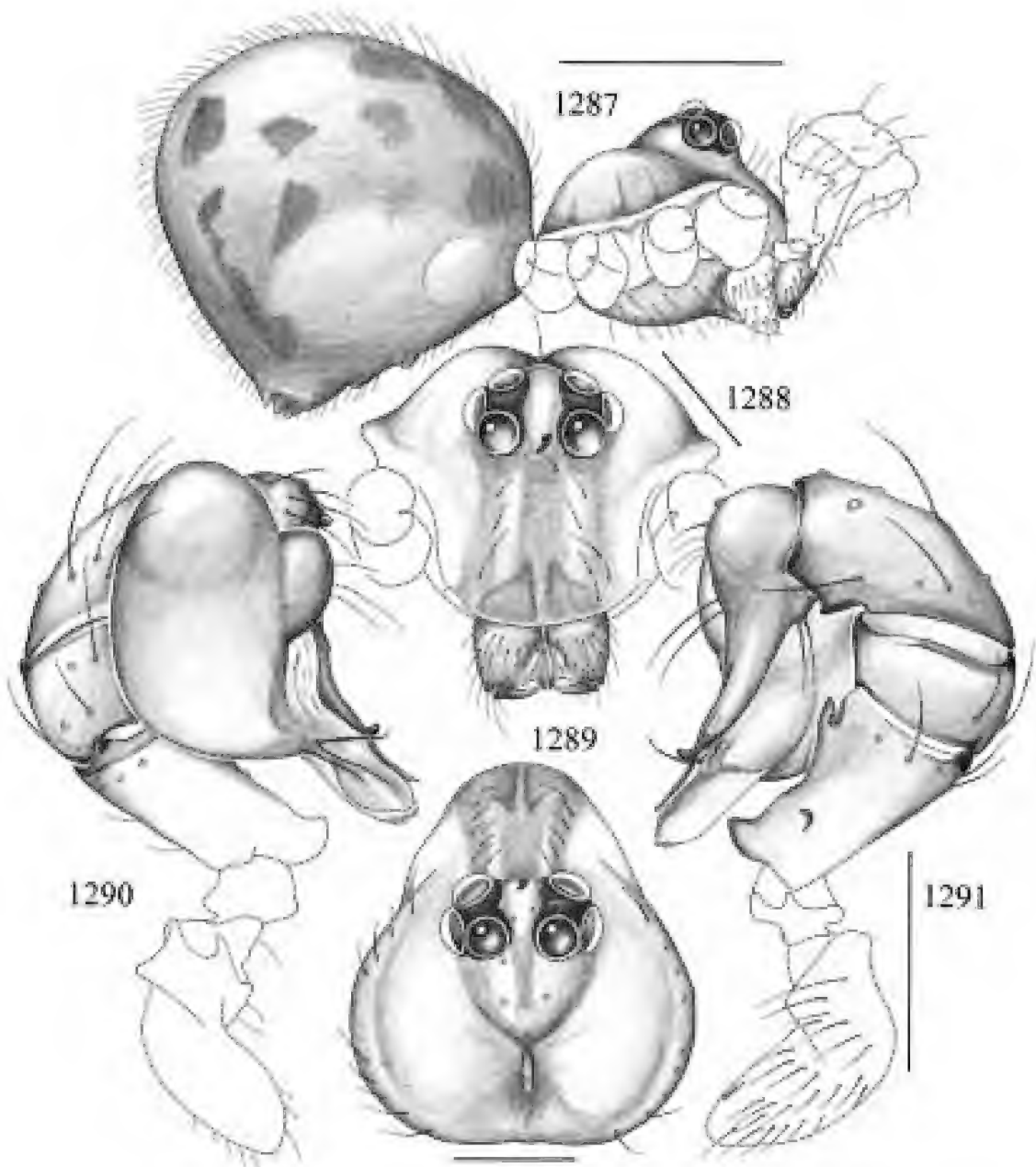
Figures 1299–1302

TYPES: Male holotype, 1♂ paratype from Teresópolis, Rio de Janeiro, Brazil; 900–1000 m elev., Mar. 1946 (H. Sick), in AMNH.

ETYMOLOGY: The specific name is a noun in apposition, referring to the club-shaped hairs on the male chelicerae (*maza* is Spanish for "club").

DIAGNOSIS: Distinguished from congeners by the relatively large club-shaped hairs on the male chelicerae (fig. 1302), the two pointed apophyses ventrally on the palpal femur (fig. 1300), and the procursus tip with a subdistal lamina ending in splayed fringes (fig. 1301).

MALE (holotype): Total length 1.6, carapace width 0.67; leg 1: 14.1 (3.5+0.3+3.6 +5.5+1.2), tibia 2: 2.1, tibia 3: 1.6, tibia 4: 2.0; tibia 1 l/d: 60. Habitus and prosoma shape as in *T. nadleri* (cf. figs. 1287–1289). Carapace orange-ochre, with light brown spot behind ocular area and blackish spot shining through near posterior margin; ocular area orange-ochre, AME reduced to black spot as in *T. nadleri* (cf. fig. 1288); distance PME-ALE about 80% of PME diameter. Clypeus light brown, sternum light orange-ochre. Chelicerae light brown, with four pairs of relatively large, club-shaped hairs on frontal face (fig. 1302). Palps as in figs. 1299–1300, with small, indistinct retrolateral coxal apophysis, femur with basal bulge ventrally, small retrolateral apophysis, and two ventral apophyses (fig. 1300); procursus ending in simple tip, with subdistal lamina ending in splayed fringes (fig. 1301); bulb with simple distal apophysis accompanying transparent fringe (figs. 1299–1300). Legs light ochre-yellow, with faint darker rings on femora (subdistally) and tibiae (distally); legs without spines and curved hairs, few vertical



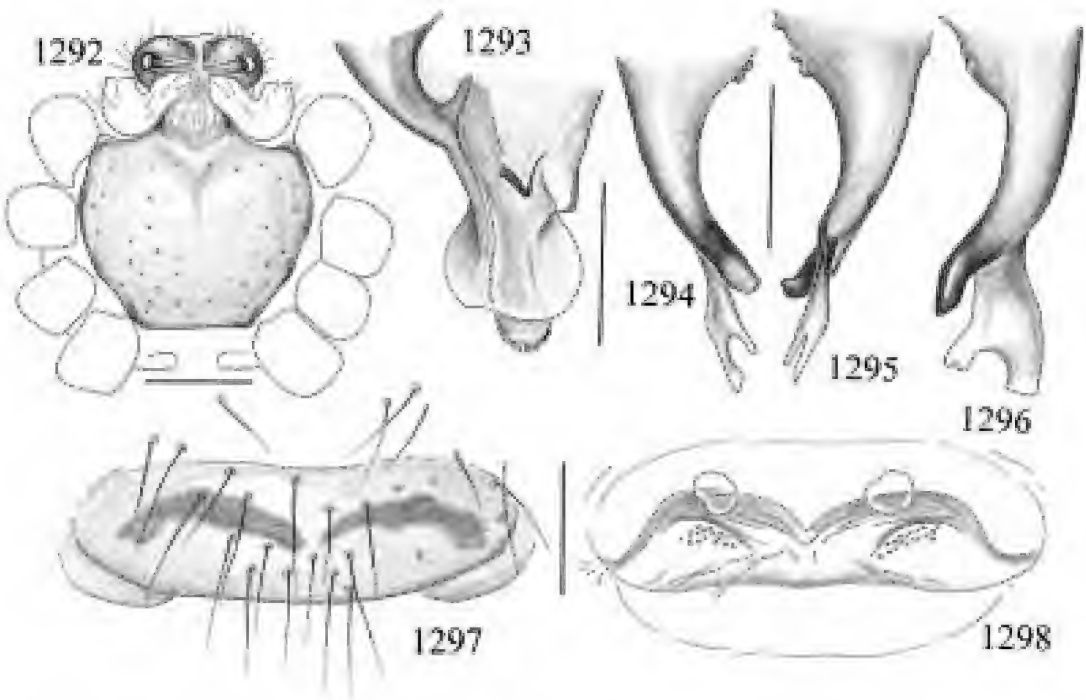
Figs. 1287–1291. *Tupigea nadleri*, n. gen., n. sp., male. **1287**. Habitus, lateral view. **1288–1289**. Prosoma, frontal and dorsal views. **1290**. Left palp, prolateral view. **1291**. Left palp, retrolateral view. Scale lines: 0.5 mm (1287), 0.2 mm (1288–1291).

hairs proximally on tibiae; retrolateral trichobothrium of tibia 1 at 18%; tarsus 1 with ~ 18 pseudosegments. Opisthosoma shape as in *T. nadleri* (cf. fig. 1287), grayish-ochre, with dark spots dorsally.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BRAZIL: *Rio de Janeiro:* Teresópolis: types above.



Figs. 1292–1298. *Tupigea nadleri*, n. gen., n. sp. **1292**. Male prosoma, ventral view. **1293**. Embolar division of left genital bulb, prolaterodorsal view. **1294–1296**. Left procursus, prolateral (1294), retrolateral (1295), and dorsal (1296) views. **1297**. Epigynum, ventral view. **1298**. Epigynum, dorsal view. Scale lines: 0.2 mm (1292), 0.1 mm (1293–1298).

Tupigea paula, new species

Figures 1303–1308

TYPES: Male holotype, 3♂ 7♀ paratypes from São Francisco de Paula (29°27′S, 50°35′W), Rio Grande do Sul, Brazil; May 14, 1993 (A. da Fonseca), in MCP (3230).

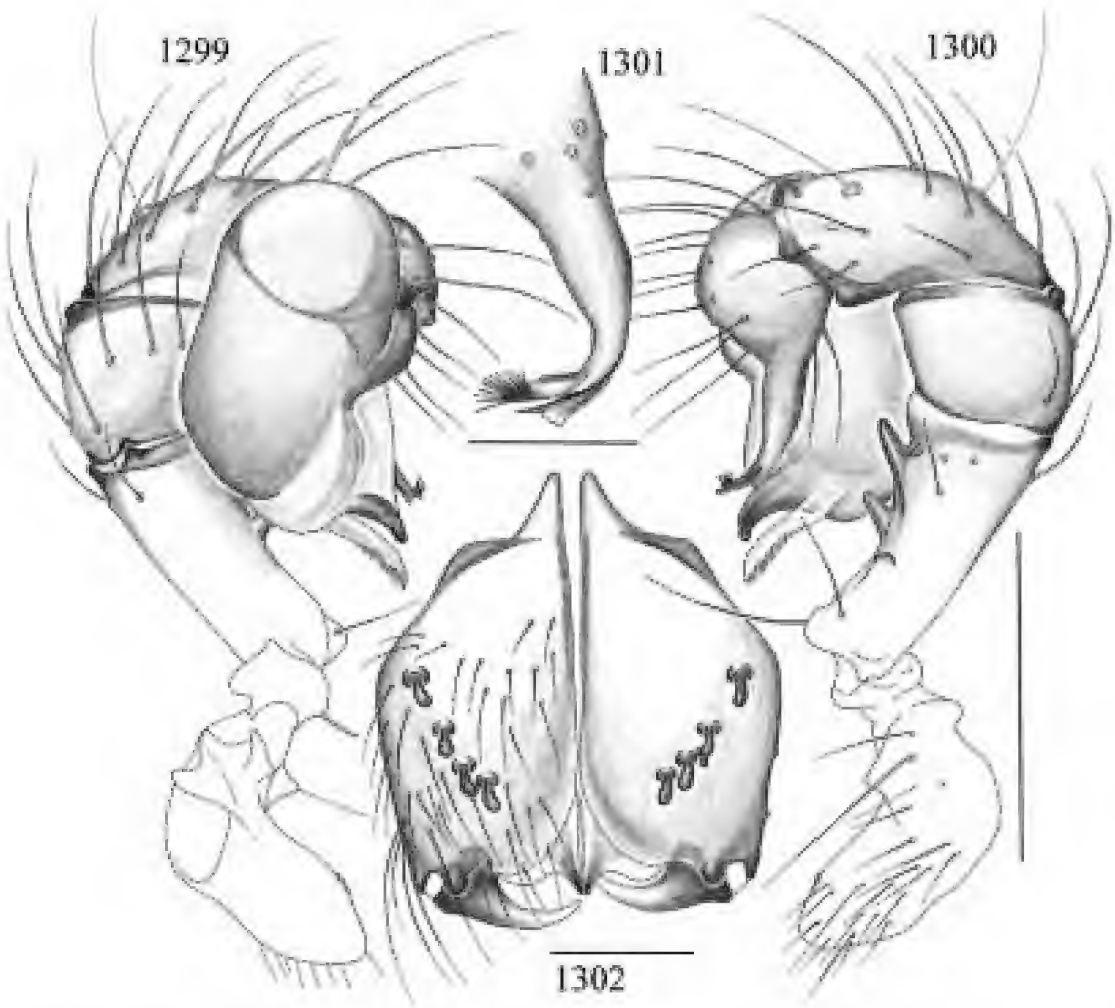
ETYMOLOGY: Named for the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from congeners by the apophyses laterally on the male chelicerae (fig. 1303), the dorsal transparent projection on the bulb (figs. 1304, 1306), and the shapes of procursus (fig. 1305) and epigynum (fig. 1308).

MALE (holotype): Total length 1.6, carapace width 0.74; leg 1: 9.8 (2.5+0.3+2.6 +3.5+0.9), tibia 2: 1.6, tibia 3: 1.3, tibia 4: 1.5; tibia 1 l/d: 43. Habitus and prosoma shape as in *T. nadleri* (cf. figs. 1287–1289); distance PME-ALE about 60% of PME diameter. Carapace ochre to light brown, with darker median line, ocular area slightly darker than carapace, AME very small but with lenses; clypeus with pair of brown stripes; sternum brown. Chelicerae light brown, with pair of simple apophyses laterally (fig. 1303). Palps as in fig. 1304, ochre to brown, without retrolateral coxal apophysis, femur with basal retrolateral apophysis, without ventral apophysis, procursus as in figs. 1304–1305, bulb with distal apophysis accompanied by membranous structures and dorsal semitransparent projection (figs. 1304, 1306). Legs ochre-yellow, with slightly darker rings on femora (distally), and tibiae (proximally and distally); without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 20%; tarsus 1 with ~ 15–16 pseudosegments. Opisthosoma greenish-gray with large darker spots dorsally.

VARIATION: Tibia 1 in male paratypes: 2.5–2.8.

FEMALE (paratypes): Tibia 1 (N = 6) 1.4–1.8 ($\bar{x}$ = 1.66). In general very similar to



Figs. 1299–1302. *Tupigea maza*, n. gen., n. sp., male. **1299**. Left palp, prolateral view. **1300**. Left palp, retrolateral view. **1301**. Left procursus, dorsal view. **1302**. Chelicerae, frontal view. Scale lines: 0.3 mm (1299–1300), 0.1 mm (1301–1302).

male. Epigynum relatively large, brown, apparently with pair of pockets laterally (fig. 1308); dorsal view as in fig. 1307, with pair of transparent globular structures between uterus externus and epigynal plate (cf. similar structure in *T. nadleri*: fig. 1298). Other females below, though from same locality as type material, differ slightly in epigynum shape and have slightly longer legs: tibia 1 (N = 6) 1.7–2.2 ($\bar{x}$ = 1.94). They are assigned tentatively.

DISTRIBUTION: Known only from São Francisco de Paula, Rio Grande do Sul, Brazil.

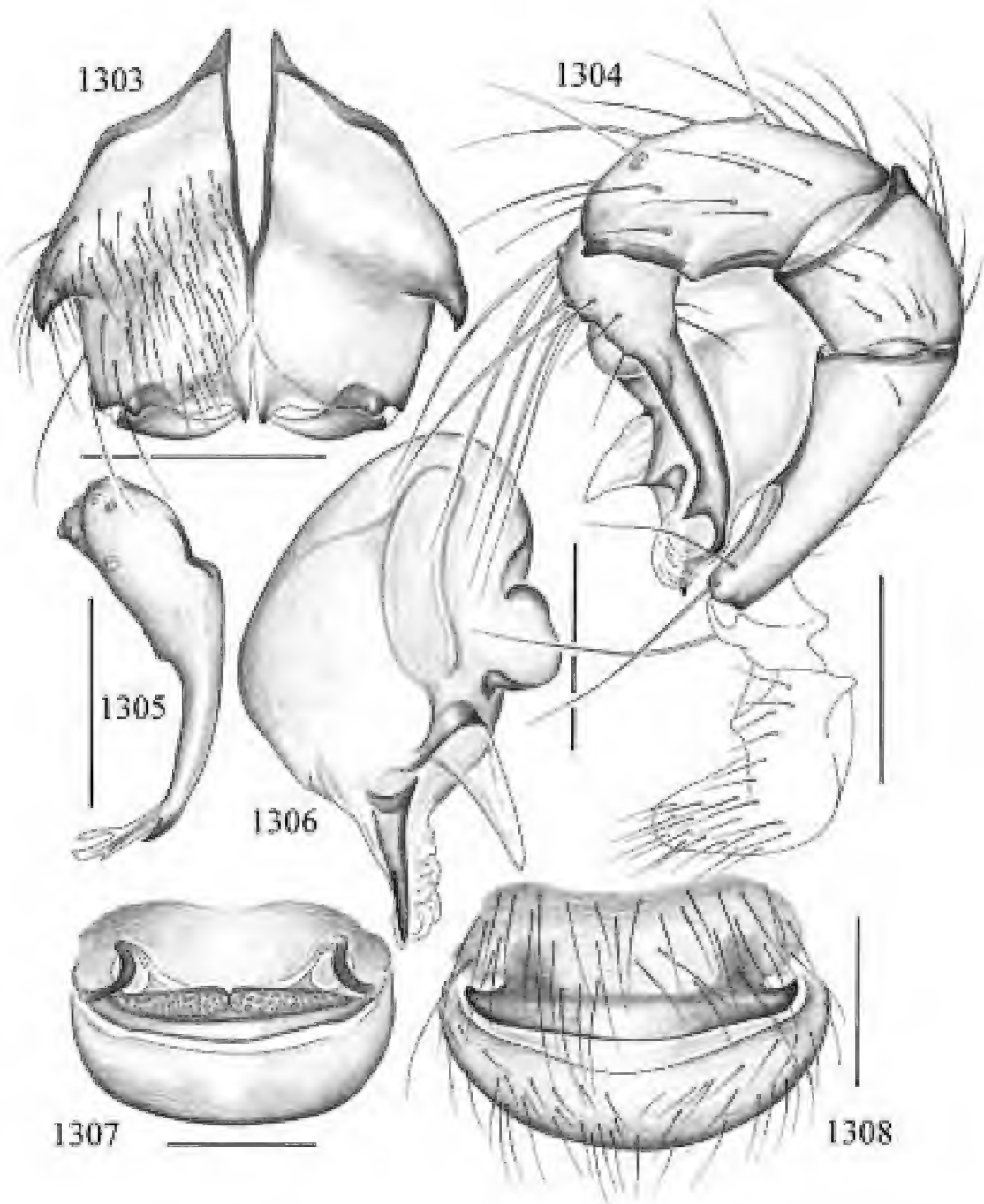
MATERIAL EXAMINED: BRAZIL: *Rio Grande do Sul*: São Francisco de Paula: types above; same locality: Oct. 26, Nov. 8, Nov. 17, 1996 (R. Ott), 7♀ 1 juvenile in MCP (9996, 10016, 10024); May 18, 1995 (A. A. Lise "et al."), 1♀ in MCP (9959).

Tupigea altiventer (Keyserling, 1891), new combination

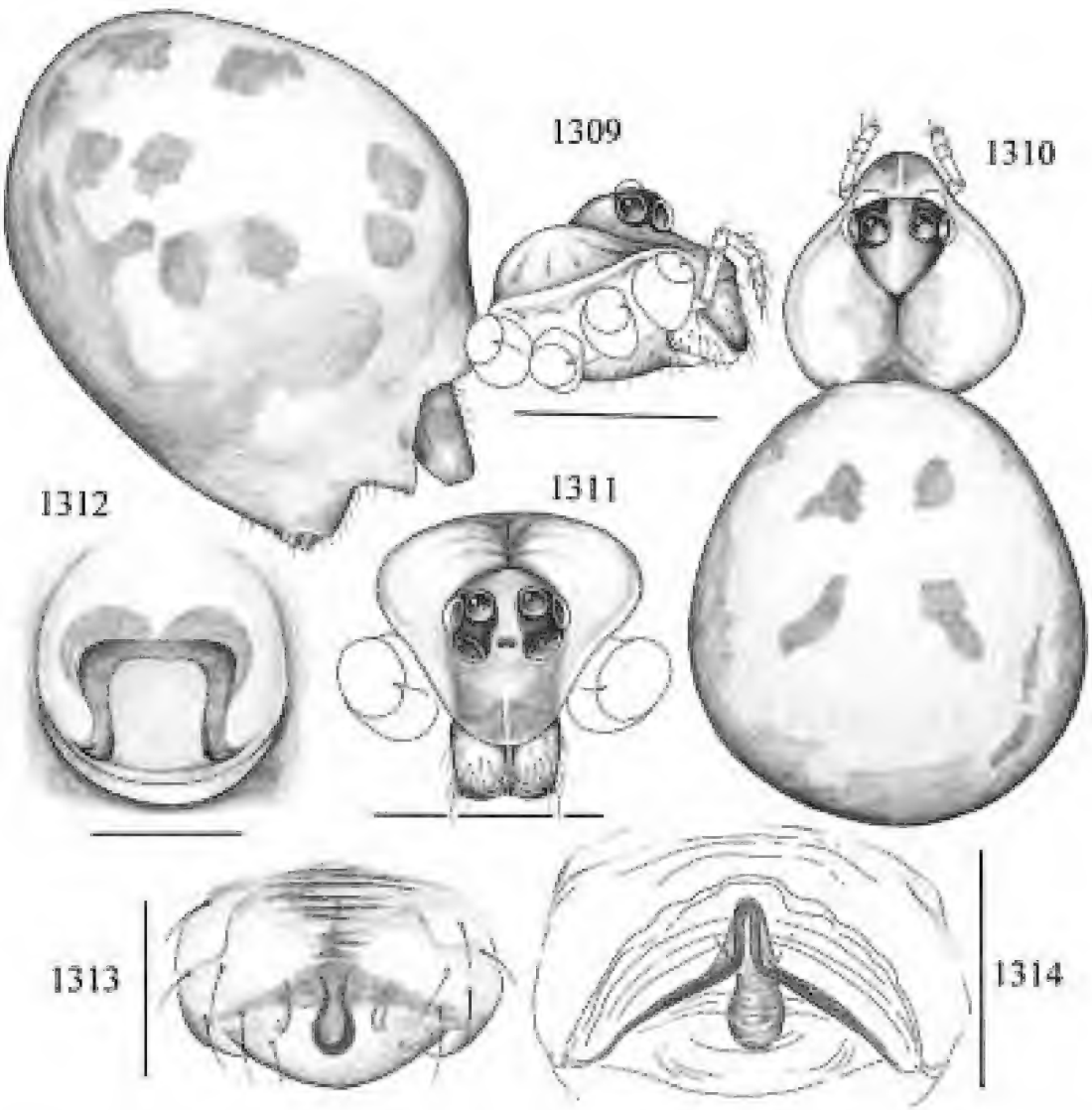
Figures 1309–1312

Pholcus altiventer Keyserling, 1891: 175–176, pl. 5: figs. 120, 120a.

Coryssocnemis altiventer: Moenkhaus, 1998: 94–95. – Mello-Leitão, 1918: 103. (Both Moenkhaus and Mello-Leitão simply translated Key-



Figs. 1303–1308. *Tupigea paula*, n. gen., n. sp. **1303**. Male chelicerae, frontal view. **1304**. Left palp, retrolateral view. **1305**. Left procursus and cymbium, retrolaterodorsal view. **1306**. Left genital bulb, ~ dorsal view. **1307**. Epigynum, dorsal view. **1308**. Epigynum, ventral view. Scale lines: 0.2 mm.



Figs. 1309–1314. *Tupigea* spp. 1309–1312. *T. altiventer* (Keyserling), female holotype. **1309–1310**. Habitus, lateral and dorsal views. **1311**. Prosoma, frontal view. **1312**. Epigynum, frontal (slightly ventral) view. 1313–1314. *T. iguassuensis* (Mello-Leitão), female lectotype. **1313**. Epigynum, ventral view. **1314**. Epigynum, dorsal view. Scale lines: 0.5 mm (1309–1311), 0.2 mm (1312–1314).

serling's original description; no new information was added apart from poorly specified new records). – Mello-Leitão, 1945: 214.

TYPE: Female holotype from "Serra Vermelha," Rio de Janeiro, Brazil; no date (E. A. Göldi), in BMNH (1890.7.1.8329), examined.

NOTE: The main point in the present context is that this species is certainly not congeneric with the type species of *Coryssocnemis*. (Moenkhaus himself noted that he had no certainty concerning the generic position.) It is here tentatively assigned to *Tupigea*, based on general morphology (small size, globular abdomen, small AME, moderately elevated ocular area), and geographic origin (southeastern Brazil). The illustrations and brief description may help in future identifi-

cation and eventual generic placement, when both sexes are collected.

MALE: Unknown.

FEMALE (holotype): Measurements copied from Keyserling, 1891 (my measurements gave only slightly different values): Total length 1.7, carapace width 0.7; leg 1: 10.7 (3.0+0.2+2.7+3.9+0.9), tibia 2: 1.5, tibia 3: 1.1, tibia 4: 1.5; tibia 1 l/d: 46. Habitus as in figs. 1309–1310. Carapace ochre-yellow with broad brown median band (fig. 1310); AME very small (fig. 1311); sternum light brown. Legs pale yellow, with distinct dark rings on femora (subdistally) and tibiae (subdistally); patellae also darker. Opisthosoma very high (fig. 1309), gray with some dark spots dorsally; epigynum simple, slightly protruding (figs. 1309, 1312).

DISTRIBUTION: Known only from type locality. Mello-Leitão (1918, 1945) claimed to have material from "various localities" in Rio de Janeiro and São Paulo, as well as from Argentina (Corrientes), but he probably never consulted the type, and did not describe the unknown male. I have not been able to locate his material.

MATERIAL EXAMINED: BRAZIL: *Rio de Janeiro:* "Serra Vermelha": type above.

Tupigea iguassuensis (Mello-Leitão, 1918), new combination

Figures 1313–1314

Litoporus iguassuensis Mello-Leitão, 1918: 94–95.

TYPE: Female lectotype (with an immature male) from "Nova Iguassú," Rio de Janeiro, Brazil; no date (B. de Freitas), in MNRJ (852), examined.

NOTE: The main point in the present context is that this species is probably not congeneric with the type species of *Litoporus.* (Note, however, the similarity of figs. 1224 and 1314.) It is tentatively assigned to *Tupigea* based on general morphology (small size, abdomen globular rather than oval, small AME, moderately elevated ocular area), and geographic origin (southeastern Brazil). The illustrations and brief description may help in future identification and eventual generic placement, when both sexes are collected.

DIAGNOSIS: Distinguished from congeners by the female epigynum and internal genitalia (figs. 1313–1314).

MALE: Unknown.

FEMALE (lectotype): Total length 1.6; carapace width 0.65; leg 1: 16.2 (4.4+0.3+3.9+6.3+1.3), tibia 2: 2.4, tibia 3: 1.6, tibia 4: 1.9; tibia 1 l/d: 58. Habitus similar to *T. altiventer* (cf. figs. 1309–1310). Carapace with thoracic groove, ochre with distinct brown median mark and brown V mark delimiting ocular area; ocular area ochre with median brown mark, moderately elevated, with small AME (diameter ~ 30 μm, compared to 85 μm of ALE); distance PME-ALE about 100% of PME diameter. Sternum pale ochre, chelicerae ochre, laterally light brown. Legs pale ochre, with brown rings on femora (subdistally), tibiae (proximally and subdistally) and metatarsi (proximally), patellae also brown; most hairs on legs missing. Opisthosoma globular, monochromous grayish (the original description says ". . . *tendo no dorso e dos lados manchas violaceas esparsas* . . ."; these marks are not visible anymore). Epigynum simple plate (fig. 1313), internal genitalia as in fig. 1314.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BRAZIL: *Rio de Janeiro*: "Nova Iguassú": type above.

CANAIMA, NEW GENUS

TYPE SPECIES: *Anopsicus arima* Gertsch, 1982.

ETYMOLOGY: The generic name is the name of a novel of Venezuela's most famous novelist, Rómulo Gallegos; it is an account of humans' struggle to survive, psychologically and physically, in the jungle. Gender feminine.

DIAGNOSIS: Tiny to small (total length 1.1–1.4 mm), six-eyed pholcids with medium-long legs, globular opisthosoma, male chelicerae with a pair of frontal apophyses, sternum with anterior humps; distinguished from similar New World genera (*Tupigea*, *Blancoa*) by the very short entapophyses of the chelicerae (arrows in figs. 1321, 1330).

DESCRIPTION: Total length ~ 1.1–1.4 mm. Carapace with distinct thoracic groove, ocular area slightly elevated, with six eyes, AME completely absent; distance PME-ALE rela-

tively large (~ 60% of PME diameter). Sternum with anterior humps. Male clypeus unmodified. Basal segments of male chelicerae with pair of simple frontal apophyses; without stridulatory ridges laterally. Male palpal coxa with retrolateral apophysis, femur with distinct retrolateral apophysis proximally, procursus and bulb variable. Tarsal organ exposed (examined: *C. arima*). Legs moderately long (leg 1 about 7 × body length; tibia 1 l/d 42–50); leg 1 longest, leg 2 about as long as leg 4, leg 3 shortest; legs without spines and curved hairs; some vertical hairs on tibiae 1 and (in *C. arima* only) femora 1; retrolateral trichobothrium of tibia 1 at ~ 26%; tarsus 1 with ~ 15 pseudosegments. Opisthosoma globular. Male epigastric system not examined. ALS with only one piriform gland spigot each (examined: *C. arima*), other spinnerets typical for family.

Sexual dimorphism slight (female of *C. merida* unknown). Epigynum very simple.

MONOPHYLY: The species included share the short entapophyses of the chelicerae (arrows in figs. 1321, 1330).

GENERIC RELATIONSHIPS: *Blancoa* is similar in habitus and eye pattern, and occurs also in Venezuela, but is distinguished by the globular palpal tibia. *Tupigea* is also very similar overall, but is distinguished by the ventrally long male palpal patella, and is apparently restricted to southeastern Brazil. The Central American and West Indian genus *Anopsicus* (in which *C. arima* was originally included) is apparently not closely related.

DISTRIBUTION: The two species described herein are from northeastern Venezuela (Mérida) and Trinidad. The USNM has a third species, very closely related to *C. arima*, from Tobago, St. Paul Parish.

Canaima arima (Gertsch, 1982), new combination

Figures 33, 1315–1327

Anopsicus arima Gertsch, 1982: 114, fig. 310.

TYPE: Female holotype from Arima Valley, Trinidad; 800–1200 ft elev., Feb. 10–22, 1964 (P. Wygodzinski & J. Rozen), in AMNH, examined.

DIAGNOSIS: Distinguished from *C. merida* by the more proximal cheliceral apophyses (fig. 1321), and the broad procursus with its two short distal projections (fig. 1323).

MALE (Simla, Arima Valley): Total length 1.1, carapace width 0.53; leg 1: 7.10 (1.84+0.19+1.97+2.29+0.81), tibia 2: 1.08, tibia 3: 0.84, tibia 4: 1.06; tibia 1 l/d: 42. Habitus and prosoma shape as in figs. 1315–1318. Entire prosoma light brown. Carapace with distinct thoracic groove (fig. 1317); six eyes on slightly elevated ocular area; distance PME-ALE about 60% of PME diameter. Sternum with pair of anterior humps (fig. 1318). Chelicerae with very short entapophyses, and pair of simple anterior apophyses (fig. 1321; see also fig. 33). Palps as in figs. 1319–1320; with distinct retrolateral coxal apophysis, femur proximally with rounded protrusion, distally with apophysis on ventral side (fig. 1322); procursus relatively simple, with two distal protrusions (fig. 1323), bulb with distinct apophysis on embolar division (figs. 1319, 1324). Tarsal organ exposed. Legs light brown; without rings, without spines and curved hairs; with few vertical hairs on femur 1 and tibia 1; retrolateral trichobothrium of tibia 1 at 26%; tarsus 1 with ~ 15 pseudosegments. Opisthosoma globular, grayish; ALS with only one piriform gland spigot each.

VARIATION: Tibia 1 in 12 males: 1.77–1.90 ($\bar{x}$ = 1.83). Opisthosoma rarely with some faint dark spots dorsally.

FEMALE: Very similar to male, but without humps on sternum. Epigynum light brown, small in relation to opisthosoma, very simple externally (figs. 1325–1326); internal genitalia as in fig. 1327. Tibia 1 (N = 10) 1.26–1.35 ($\bar{x}$ = 1.28); tibia 1 in female holotype: 1.24.

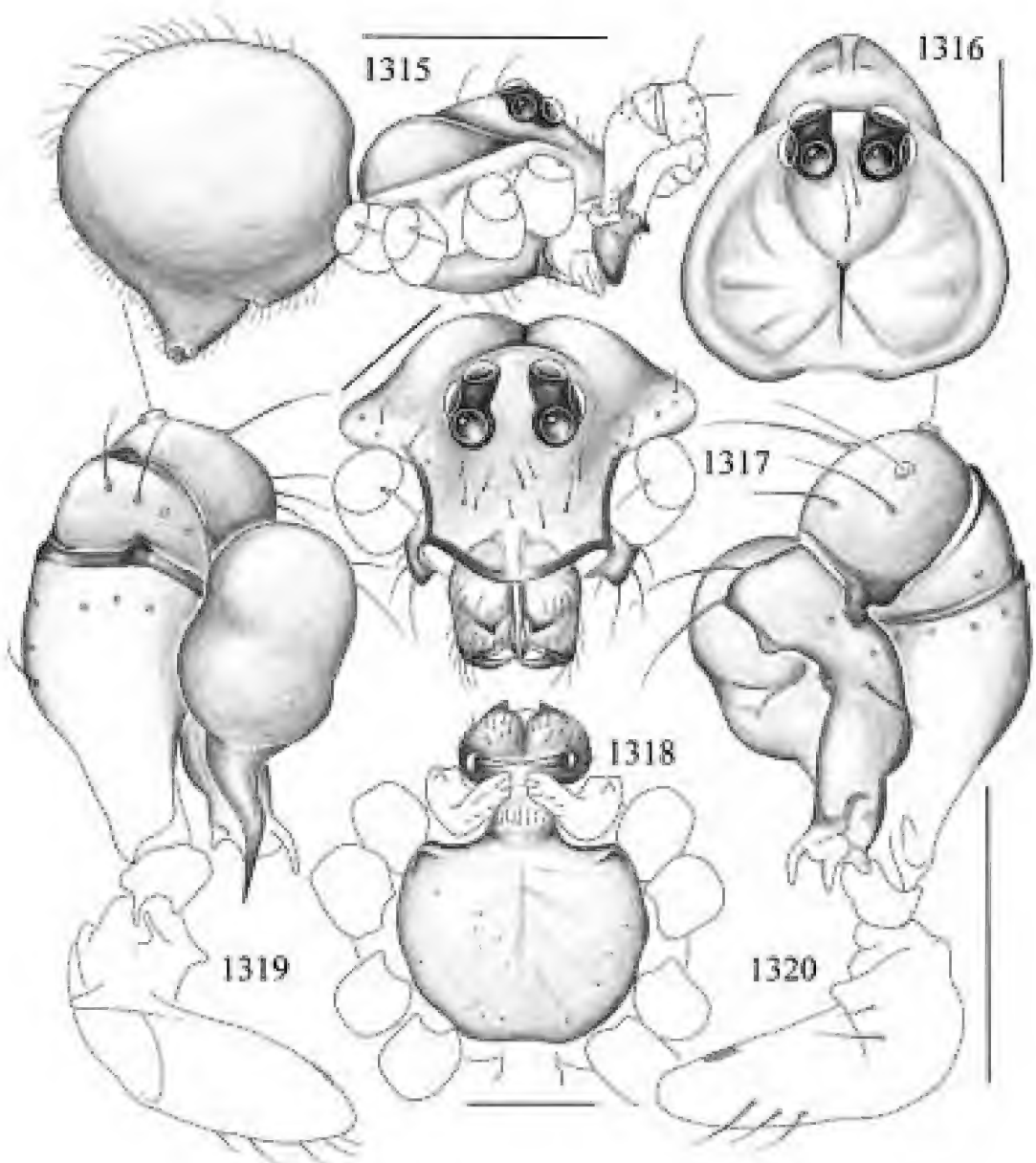
DISTRIBUTION: Known only from Trinidad.

MATERIAL EXAMINED: TRINIDAD: *St. George:* Arima Valley: type above; same data: 3♀ in AMNH; Arima Valley: Simla, Apr. 12–28, 1964 (4 vials with varying dates) (A. M. Chickering), 16♂ 61♀ many juveniles in AMNH; same data but Apr. 20, 1964 (2 vials), 4♀ in MCZ; Blanchisseuse, beach area, Apr. 22, 1964 (A. M. Chickering), 4♀ 1 juvenile in AMNH, assigned tentatively.

Canaima merida, new species

Figures 1328–1332

TYPE: Male holotype from El Valle, 15 km NE Mérida, Dept. Mérida, Venezuela; 2400



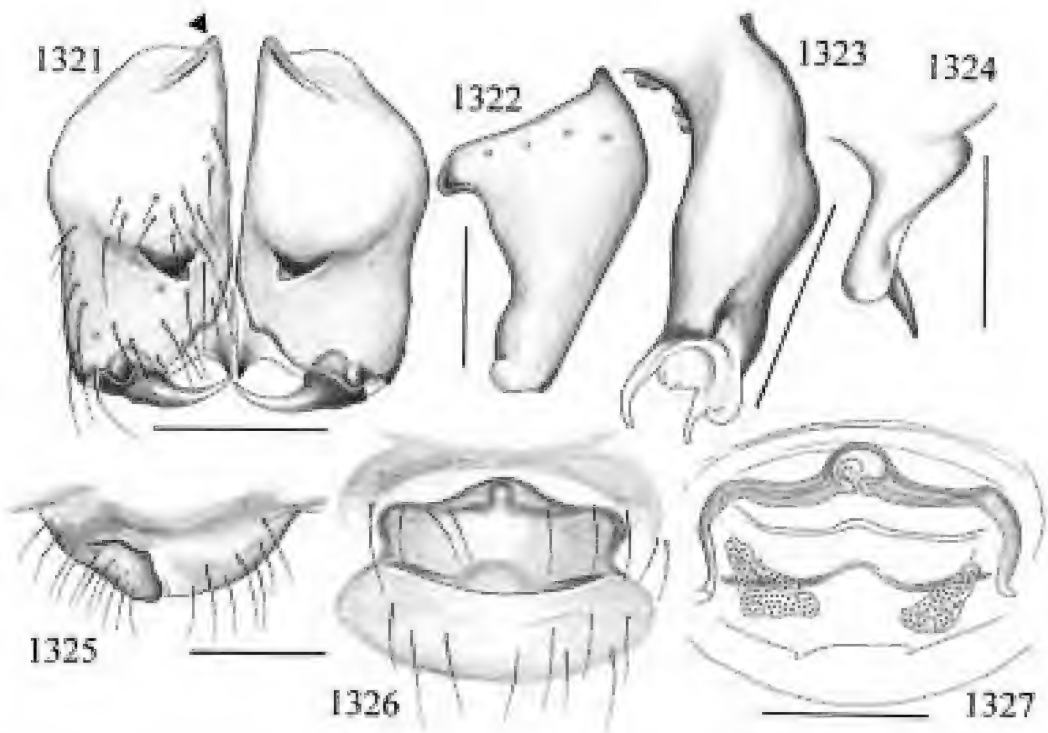
Figs. 1315–1320. *Canaima arima* (Gertsch), male. **1315**. Habitus, lateral view. **1316–1318**. Prosoma, dorsal, frontal, and ventral views. **1319**. Left palp, prolateral view. **1320**. Left palp, retrolateral view. Scale lines: 0.5 mm (1315), 0.2 mm (1316–1320).

m elev., cloud forest, June 24–Aug. 2, 1989 (S. & J. Peck), in AMNH.

ETYMOLOGY: Named for the city close to the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from *C. arima* by the more distal cheliceral apophyses (fig. 1330), and the procursus with its two black tips (fig. 1331).

MALE (holotype): Total length 1.4, carapace width 0.72; leg 1: 10.1 (2.5+0.3+2.7 +3.6+1.1), tibia 2: 1.5, legs 3 and 4 missing; tibia 1 l/d: 50. Habitus very similar to *C. arima* (cf. fig. 1315), but with slightly higher



Figs. 1321–1327. *Canaima arima* (Gertsch). **1321**. Male chelicerae, frontal view. **1322**. Male left palpal femur, retrolateral view. **1323**. Left procursus, retrolateral view. **1324**. Embolar division of left genital bulb, ~ dorsal view. **1325–1326**. Epigynum, lateral and ventral views. **1327**. Epigynum, dorsal view. Scale lines: 0.1 mm.

ocular area (more like that of *Blancoa piacoa*, cf. fig. 1333); distance PME-ALE about 60% of PME diameter. Entire prosoma light brown. Sternum with pair of anterior humps. Chelicerae orange-ochre with very short entapophyses, and pair of blackish anterior apophyses (fig. 1330). Palps as in figs. 1328–1329; orange-ochre to light brown, with distinct retrolateral coxal apophysis, femur proximally with rounded protrusion, distally widened with sclerotized rim ventrally; procursus relatively simple, with two blackish distal tips (fig. 1331), bulb with distinct apophysis on embolar division (figs. 1328–1329). Legs ochre-yellow, without rings; without spines and curved hairs; with few vertical hairs on tibiae; retrolateral trichobothrium of tibia 1 at 26%; tarsus 1 with ~ 15 pseudosegments. Opisthosoma slightly shrunken, apparently globular as in *C. arima* (cf. fig. 1315), dark greenish-gray with large dark spots dorsally.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: VENEZUELA: *Mérida:* 15 km NE Mérida: type above.

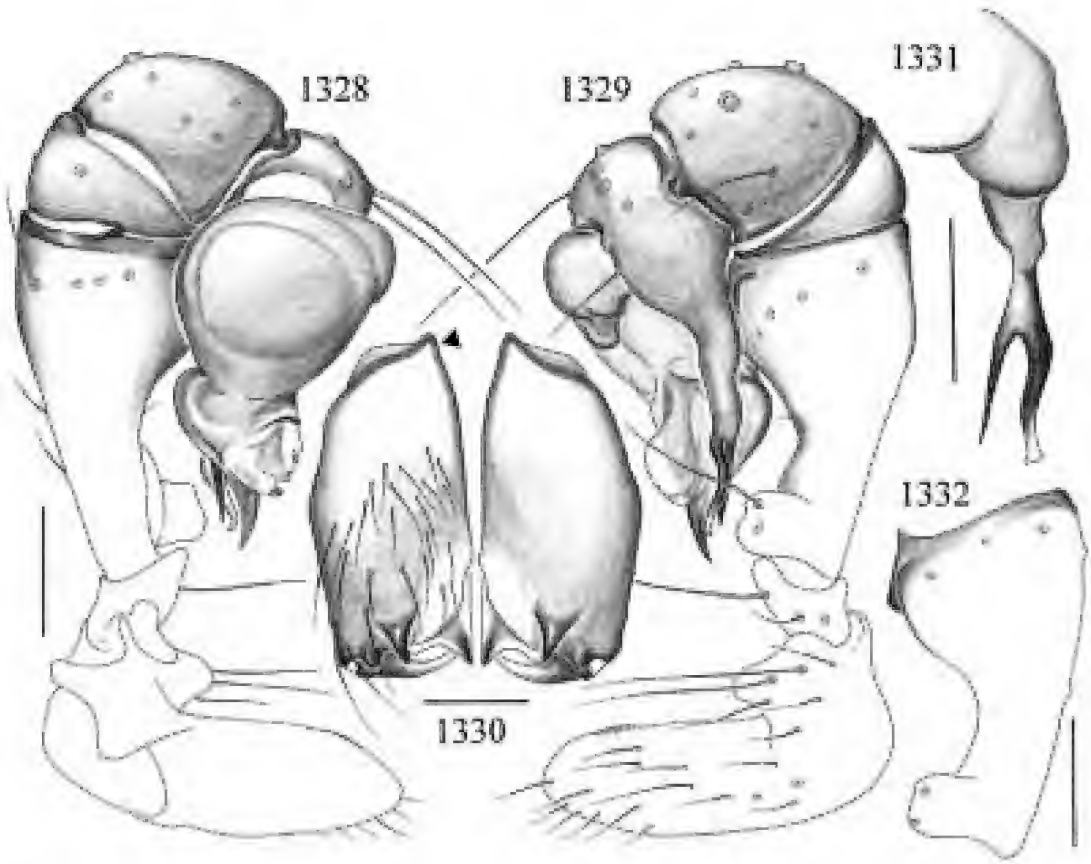
BLANCOA, NEW GENUS

TYPE SPECIES: *Blancoa piacoa*, new species.

ETYMOLOGY: The generic name honors the Venezuelan poet Andrés Eloy Blanco, author of "Angelitos Negros."

DIAGNOSIS: Tiny to small (total length ~ 1.2–1.5 mm), six-eyed pholcids with medium-long legs, globular opisthosoma; distinguished from similar New World genera (*Canaima*, *Tupigea*) by the extremely globular male palpal tibia (figs. 1338, 1349).

DESCRIPTION: Total length ~ 1.2–1.5 mm. Carapace with distinct thoracic groove, ocular area moderately elevated, with six eyes; AME completely absent in *B. piacoa*, n. sp.; reduced to black spots in *B. guacharo*, n. sp.;



Figs. 1328–1332. *Canaima merida*, n. gen., n. sp., male holotype. **1328**. Left palp, prolateral view. **1329**. Left palp, retrolateral view. **1330**. Chelicerae, frontal view. **1331**. Left procursus, dorsal view. **1332**. Left palpal femur, retrolateral view. Scale lines: 0.1 mm.

distance PME-ALE relatively large (~ 60% of PME diameter). Sternum without anterior humps. Male clypeus unmodified. Basal segment of male chelicerae unmodified in *B. piacoa*, with pair of thick club-shaped hairs and small apophyses in *B. guacharo*; without stridulatory ridges; cheliceral fangs with basal apophyses in *B. piacoa*, unmodified in *B. guacharo*; male palpal coxa with indistinct retrolateral apophysis, femur with distinct retrolateral apophysis proximally, procursus and bulb variable. Tarsal organ exposed (examined: *B. piacoa*). Legs relatively long (leg 1 about 8 × body length; tibia 1 l/d 52 and 71 in the two species included); leg 1 longest, leg 2 slightly longer than leg 4, leg 3 shortest; legs without spines and curved hairs; with some vertical hairs on tibiae (in *B. piacoa* only); retrolateral trichobothrium of tibia 1 at 3% in *B. guacharo*, at 21% in *B. piacoa*; tarsus 1 with ~ 15 pseudosegments in *B. piacoa*, ~ 27 in *B. guacharo*. Opisthosoma globular. Male gonopore without epiandrous spigots (examined: *B. piacoa*). ALS with only one piriform gland spigot each (examined: *B. piacoa*: fig. 182), other spinnerets typical for family.

Sexual dimorphism slight (female of *B. guacharo* unknown). Epigynum very simple.

MONOPHYLY: The two species included share the extremely inflated male palpal tibia. However, this character is not unique for the genus (see e.g., *Guaranita*, *Kambiwa*) but the overall similarity and the fact that both are from the same geographic area is here tentatively used to argue for their phylogenetic closeness.

GENERIC RELATIONSHIPS: *Canaima* is sim-

ilar in habitus and eye pattern, and occurs also in Venezuela, but has a "normal" (i.e., not inflated) palpal tibia, short cheliceral entapophyses, and humps on the sternum. The fang apophyses in *B. piacoa* are strikingly similar to *Galapa* (compare figs. 30, 32), but that genus is otherwise very different in several aspects (no thoracic groove, AME large, stridulatory ridges on male chelicerae, palpal coxa without retrolateral apophysis, tarsal organ capsulate, gonopore with epiandrous spigots, ALS with several piriform gland spigots), so the similarity is here interpreted as convergence.

DISTRIBUTION: Known only from northeastern Venezuela (Delta Amacuro, Monagas, Bolívar).

Blancoa piacoa, new species

Figures 32, 131, 182, 1333–1344

TYPES: Male holotype, 14 ♂ 2♀ paratypes (2 vials) from 11 km W Piacoa, Dept. Delta Amacuro, Venezuela; "seasonal humid forest, on sand, malaise," Aug. 14–31, 1987 (S. & J. Peck), in AMNH.

ETYMOLOGY: Named for the city close to the type locality. The specific name is a noun in apposition.

DIAGNOSIS: Distinguished from *B. guacharo* by the unmodified basal segments of the chelicerae, the hook-shaped apophyses on the cheliceral fangs (fig. 1340), the transparent procursus (fig. 1341), and the relatively simple, spirally curved bulbal apophysis (figs. 1337–1338).

MALE (holotype): Total length 1.2, carapace width 0.63; leg 1: 10.1 (2.3+0.3+2.7 +3.9+0.9), tibia 2: 1.6, tibia 3: 1.1, tibia 4: 1.4; tibia 1 l/d: 52. Habitus as in fig. 1333; carapace ochre, darker medially, with distinct thoracic groove; six eyes in two triads on moderately elevated, light brown ocular area (figs. 1334–1335); distance PME-ALE about 60% of PME diameter. Clypeus brown; sternum pale ochre-yellow, without anterior humps (fig. 1339); basal segments of chelicerae unmodified, but fangs with hook-shaped apophyses basally (figs. 32, 1340). Palps as in figs. 1337–1338, pale ochre to brown, retrolateral coxal apophysis blunt, femur with retrolateral apophysis basally and prolateroventral bulge distally (fig. 1336), tibia almost globular (fig. 1338); procursus simple, almost transparent (fig. 1341); bulb with strong, slightly spiraling apophysis, with short subdistal branch (fig. 1338). Tarsal organ exposed. Legs yellowish-ochre, with slightly darker rings on femora (subdistally) and tibiae (distally); without spines and curved hairs; with few vertical hairs on tibiae; retrolateral trichobothrium of tibia 1 at 21%; tarsus 1 with ~ 15 pseudosegments. Opisthosoma gray, with some dark spots dorsally; gonopore without epiandrous spigots (fig. 131); ALS with only one piriform gland spigot each (fig. 182).

VARIATION: Tibia 1 in 9 other males: 2.2–2.8 ($\bar{x}$ = 2.52).

FEMALE (paratype): Total length 1.4; tibia 1: 1.7. In general very similar to male. Epigynum brown, slightly protruding but simple (figs. 1342–1343), internal genitalia apparently with median receptacle (fig. 1344).

DISTRIBUTION: Known from northeastern Venezuela (Delta Amacuro, Monagas, Bolívar).

MATERIAL EXAMINED: VENEZUELA: *Delta Amacuro:* 11 km W Piacoa: types above. *Monagas*: 15 km N Maturín, "flood plain forest," July 19–31, 1987 (S. & J. Peck), 5♂ (2 vials) in AMNH; 27 km SW Caripe, 300 m elev., "forest over coffee," July 19–31, 1987 (S. & J. Peck), 1♂ in AMNH. *Bolívar*: Guri (S Puerto Ordaz), "fairly wet forest, mostly lowland evergreen type," July 3–15, 1998 (H. & A. Howden), 2♂ in AMNH.

Blancoa guacharo, new species

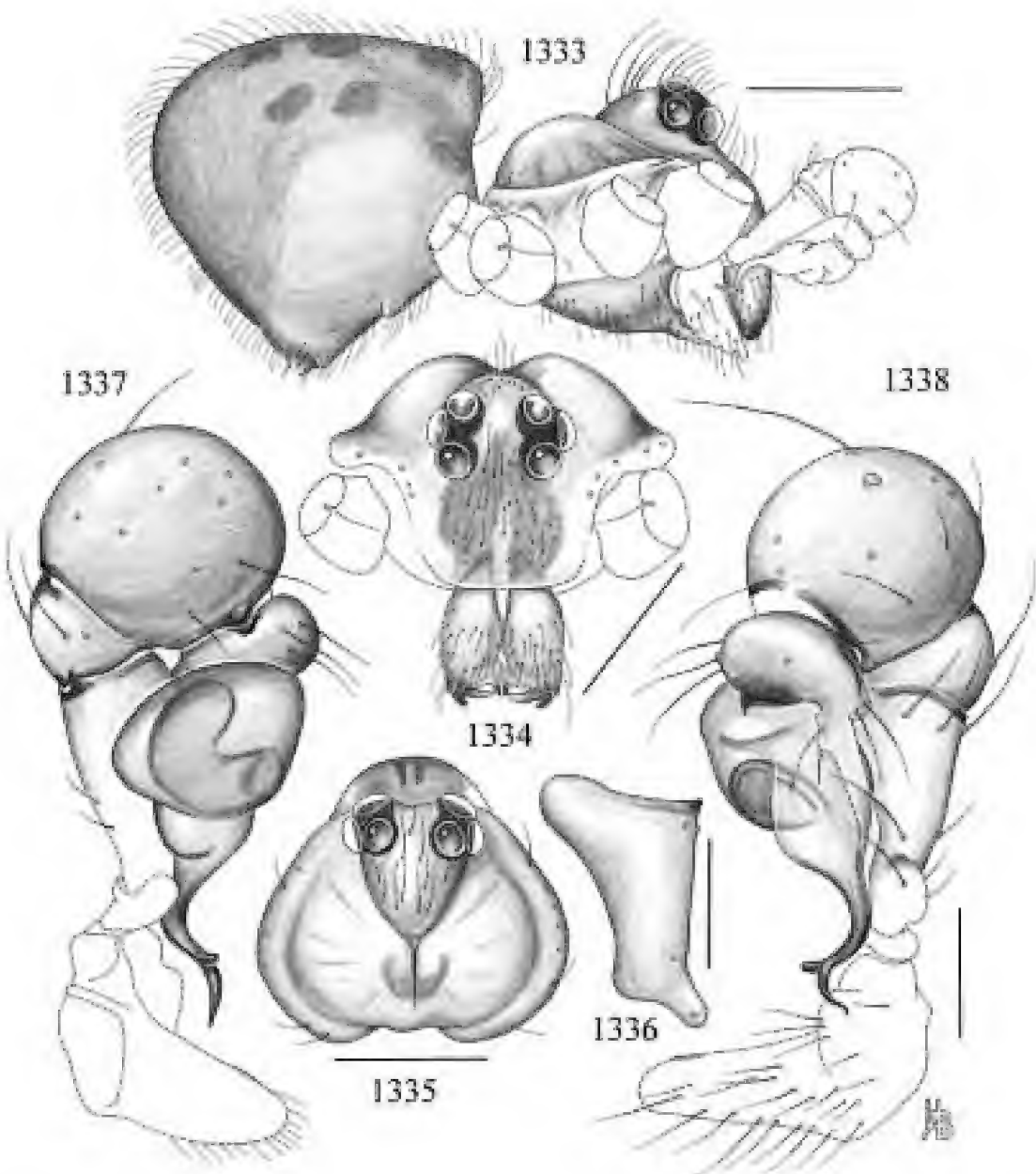
Figures 1345–1355

TYPE: Male holotype from Caripe (10°12′N, 63°29′W), Cueva Guacharo, Dept. Monagas, Venezuela; 750 m elev., "forest over coffee," July 20–31, 1987 (S. & J. Peck), in AMNH.

ETYMOLOGY: Named for the type locality (*guacharo* is Spanish for "nightingale"). The specific name is a noun in apposition.

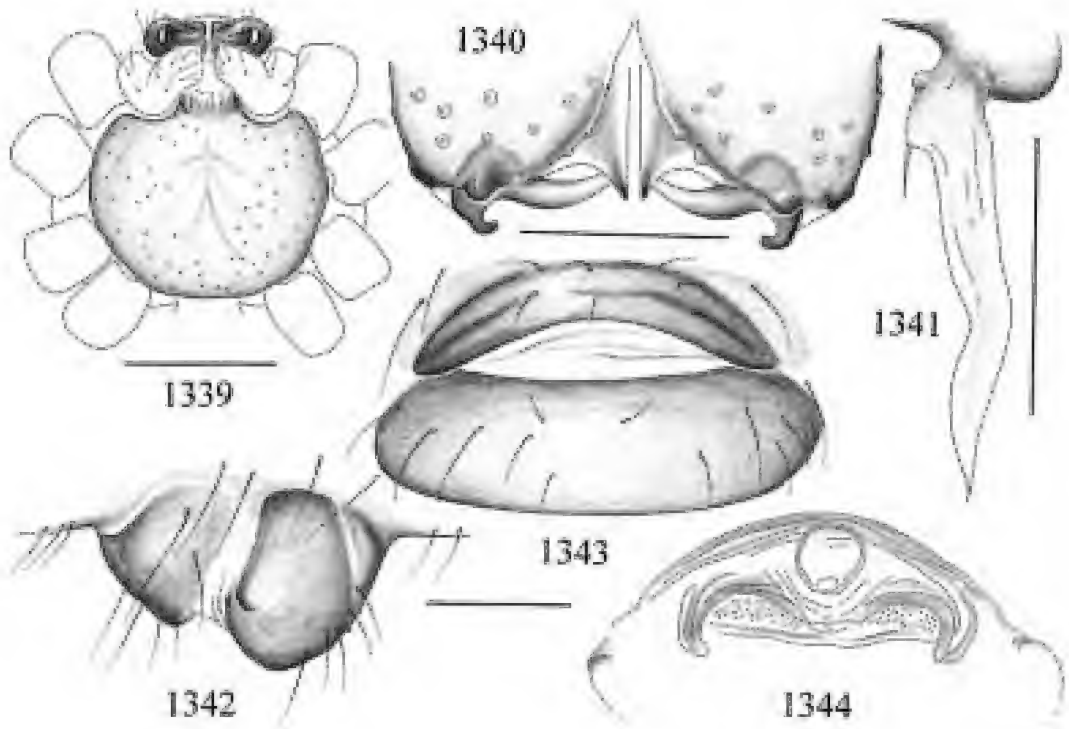
DIAGNOSIS: Distinguished from *B. piacoa* by the club-shaped modified hairs frontally on the male chelicerae (fig. 1352), the ribbon-shaped, slightly curved procursus (fig. 1350), and the complex bulb with several distal structures (figs. 1354–1355).

MALE (holotype): Carapace width 0.87;



Figs. 1333–1338. *Blancoa piacoa*, n. gen., n. sp., male. **1333**. Habitus, lateral view. **1334–1335**. Prosoma, frontal and dorsal views. **1336**. Left palpal femur, retrolateral view. **1337**. Left palp, prolateral view. **1338**. Left palp, retrolateral view. Scale lines: 0.3 mm (1333–1335), 0.1 mm (1336–1338).

leg 1: 22.7 (5.4+0.4+5.5+9.7+1.7), tibia 2: 3.2, tibia 3: 2.3, tibia 4: 2.8; tibia 1 l/d: 71. Prosoma as in figs. 1345–1347; carapace ochre-yellow, light brown around ocular area and median line, thoracic groove distinct; ocular area orange-brown with brown marks, AME reduced to pair of black spots, apparently without lenses (fig. 1346); distance PME-ALE about 60% of PME diameter. Clypeus with pair of brown marks; sternum



Figs. 1339–1344. *Blancoa piacoa*, n. gen., n. sp. **1339**. Male prosoma, ventral view. **1340**. Distal part of male chelicerae, frontal view. **1341**. Left procursus, retrolateral view. **1342–1343**. Epigynum, lateral and ventral views. **1344**. Epigynum, dorsal view. Scale lines: 0.3 mm (1339), 0.1 mm (1340–1344).

light ochre, without anterior humps; chelicerae ochre-yellow, with pair of dark brown, club-shaped modified hairs and pair of light brown apophyses (figs. 1352–1353). Palps as in figs. 1348–1349; light to dark orange-ochre, retrolateral coxal apophysis blunt, femur with proximal and distal apophyses (fig. 1351), tibia globular; strong hairs distally on tibia and cymbium (fig. 1349); procursus ribbon-shaped, slightly curved (fig. 1350); bulb complex distally (figs. 1354–1355). Legs light ochre-yellow, with very faint darker rings on femora and tibiae (subdistally); without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 with ~ 25 pseudosegments. Opisthosoma missing.

FEMALE: Unknown.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: VENEZUELA: *Monagas*: Caripe: type above.

SPECIES INCERTAE SEDIS

"Pholcophora" bahama Gertsch, 1982

Figure 1356

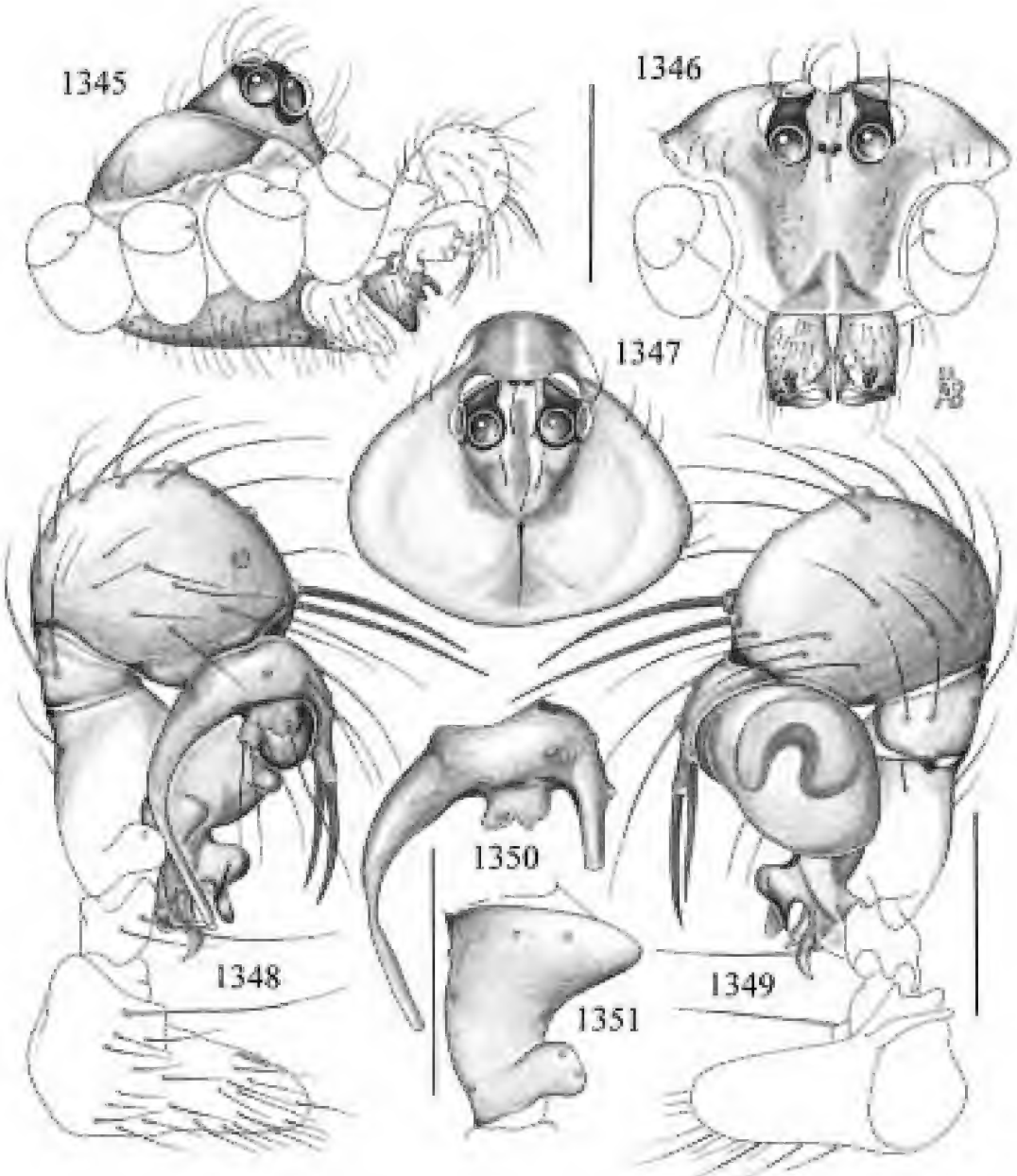
Pholcophora bahama Gertsch, 1982: 104, figs. 329–331.

NOTE: This species is very probably misplaced, but males need to be studied before deciding on the generic position.

TYPE: Female holotype from West Caicos Island, British West Indies, Bahamas; Feb. 4, 1953 (Hayden & Giovannoli), in AMNH (examined).

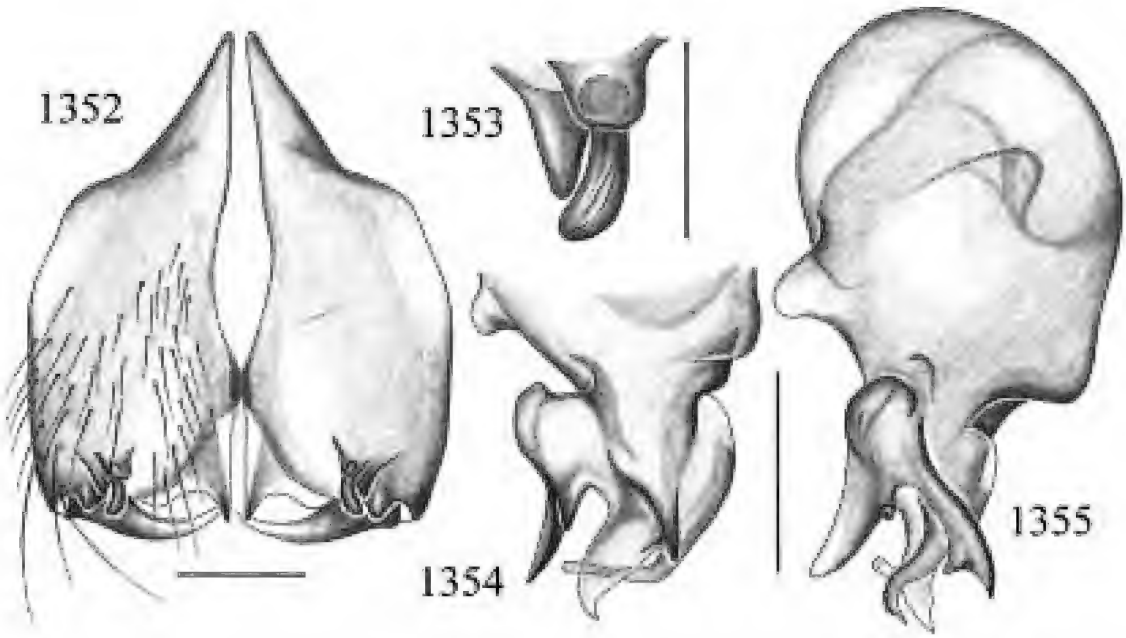
DIAGNOSIS: Small, short-legged pholcid with eight eyes, without thoracic groove; distinguished from other ninetines by the unpaired receptacle(?) in the female internal genitalia (fig. 1356).

MALE: Unknown.



Figs. 1345–1351. *Blancoa guacharo*, n. gen., n. sp., male holotype. **1345–1347**. Prosoma, lateral, frontal, and dorsal views. **1348**. Right palp, retrolateral view. **1349**. Right palp, prolateral view. **1350**. Right procursus, retrolateral view. **1351**. Right palpal femur, retrolateral view. Scale lines: 0.5 mm (1345–1347), 0.2 mm (1348–1351).

FEMALE (holotype, see also Gertsch, 1982): Total length 1.72, carapace width 0.71; leg 1: 3.87 (1.06+0.29+0.97+1.10 +0.45), tibia 2: 0.81, tibia 3: 0.71, tibia 4: 1.06. Habitus similar to *Chisosa diluta* (cf. figs. 478–479), without thoracic groove. Prosoma ochre, legs ochre-yellow. Retrolateral trichobothrium of tibia 1 at 54%; tarsus 1



Figs. 1352–1355. *Blancoa guacharo*, n. gen., n. sp., male holotype. **1352**. Chelicerae, frontal view. **1353**. Modifications on right male chelicera. **1354**. Embolar division of right genital bulb, prolateral view. **1355**. Genital bulb, prolaterodorsal view. Scale lines: 0.1 mm (1352, 1354–1355), 0.05 mm (1353).

with 5–6 pseudosegments; opisthosoma globular, monochromous ochre-gray. Internal female genitalia as in fig. 1356, apparently with unpaired receptacle.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: BAHAMAS: *West Caicos Island*: type above.

"Pholcophora" maria Gertsch, 1977

Figure 1357

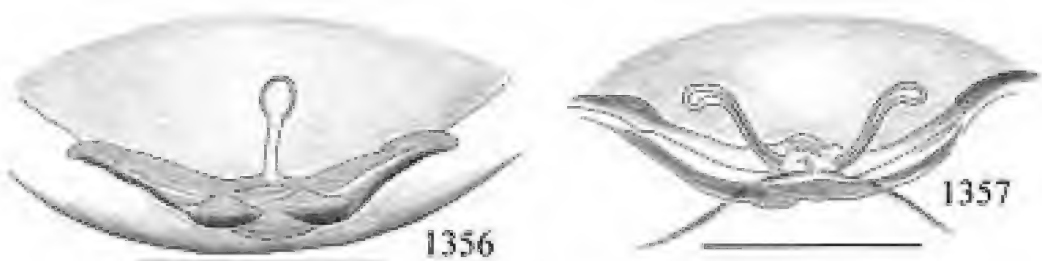
Pholcophora maria Gertsch, 1977: 112–114, figs. 33–35. – Gertsch, 1982: 104.

NOTE: This species is very probably misplaced, but males need to be studied before deciding on the generic position.

TYPE: Female holotype from Actún Xpukil, Yucatán, Mexico; Mar. 18–19, 1973 (J. Reddell, S. Murphy, D. & M. McKenzie, M. Butterwick), in AMNH (examined).

DIAGNOSIS: Small, short-legged pholcid with eight eyes, without thoracic groove; distinguished from other ninetines by the pair of receptacles(?) in the female internal genitalia (fig. 1357).

MALE: Unknown.



Figs. 1356–1357. "*Pholcophora*" incertae sedis. **1356**. "*Pholcophora" bahama* Gertsch, female holotype: epigynum, dorsal view. **1357**. "*Pholcophora" maria* Gertsch, female holotype: epigynum, dorsal view. Scale lines: 0.2 mm.

FEMALE (holotype; see also Gertsch, 1977): Total length 1.56, carapace width 0.64; leg 1 missing (Gertsch's measurements: 1.05+0.32 +0.93+1.08+0.43, total: 3.81), tibia 2: 0.77, tibia 3: 0.68, tibia 4: 1.06. Habitus similar to *Chisosa diluta* (cf. figs. 478–479), without thoracic groove. Prosoma and legs ochre-brown, opisthosoma monochromous ochre-gray. Female internal genitalia as in fig. 1357, apparently with pair of receptacles.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: MEXICO: *Yucatán*: type above.

REMARK: Gertsch (1977) speculated about a closer relationship with *Pholcophora texana*. This claim was possibly based on the similar pair of structures in the female internal genitalia (compare figs. 446 and 1357).

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APPENDIX 1

Matrix for Phylogenetic Analysis

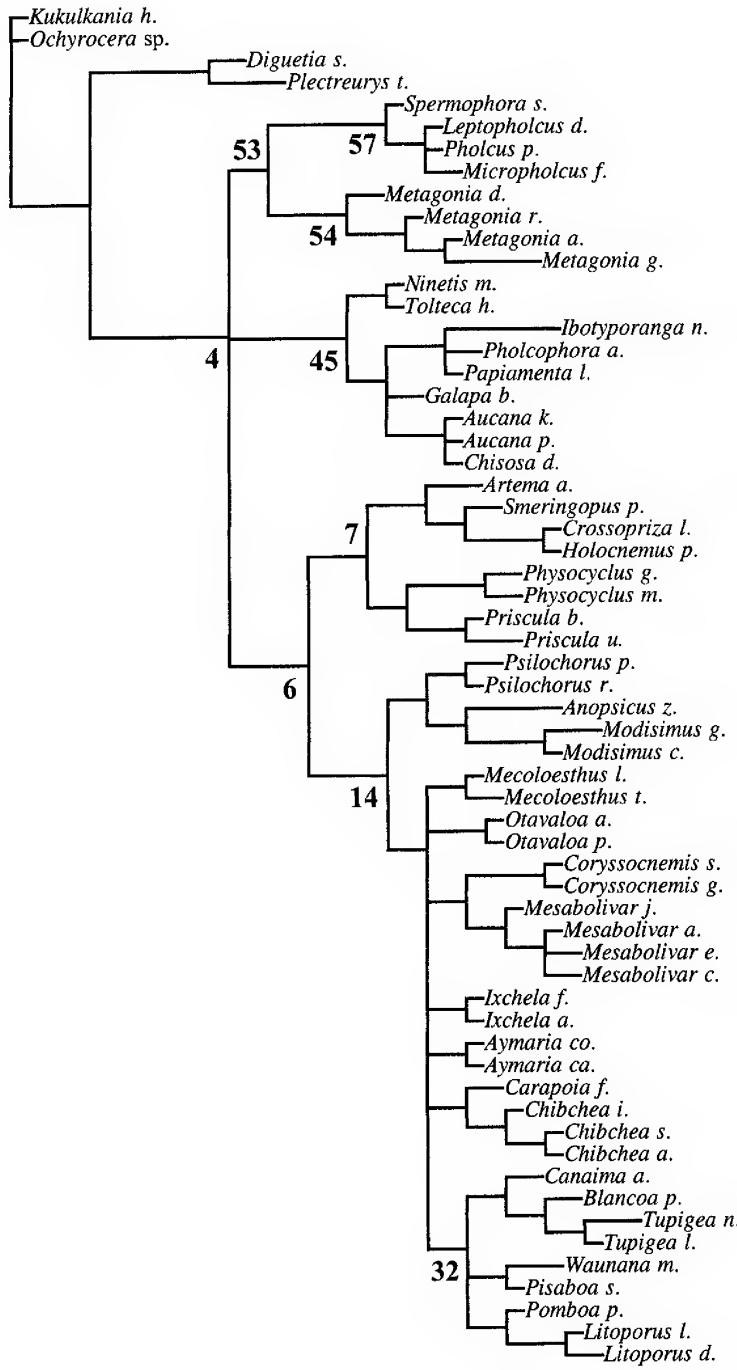
	10	20	30	40	50	60	
1. *Kukulkania h.*	0111010000	01000?0000	0001001010	?10--00?00	0000-00001	00---10000	?
2. *Ochyrocera* sp.	1??1010000	0100100000	0000001000	?10--00-00	0000-00000	00---10000	0
3. *Diguetia s.*	1??0000002	00001?0000	1100010000	?00--00000	0000-00000	00---10000	0
4. *Plectreurys t.*	0010000002	00101?0000	1100000?10	?00--01000	0000-00000	00---0-000	0
5. *Metagonia a.*	1101000111	01101?0001	1000001100	1111010000	0001100000	0110010001	1
6. *Metagonia r.*	1101000110	0110110001	1000001100	1111010000	0001100000	0110010001	1
7. *Metagonia d.*	1000000100	0111110001	1000001100	1111010000	0001100000	0110010001	1
8. *Metagonia g.*	1101010111	0?101?0001	1000001100	1010011000	0001100000	0110010001	1
9. *Pholcus p.*	0002000101	0110101000	1000001100	111?010?01	0001110000	1100010001	0
10. *Leptopholcus d.*	0002000101	0110101000	1000001100	1111010001	0001110000	1100010001	0
11. *Spermophora s.*	1000000101	0110101000	1000001100	1111010001	0001110000	1100010001	1
12. *Micropholcus f.*	0002000101	0110101000	1000001100	1111010001	0001110000	1100010002	-
13. *Ninetis m.*	0100000100	1110100000	1000000100	0010010000	0000-00000	0100011002	-
14. *Ibotyporanga n.*	0101010101	01111?0000	1000010100	0010011100	0000-00001	0100011002	-
15. *Galapa b.*	0100000100	01101?0000	1000000100	0010011010	0000-00000	0100011002	-
16. *Aucana p.*	0100000100	0010100000	1000000100	0010011000	0000-00000	010000-002	-
17. *Aucana k.*	0100000100	00101?0000	1000000100	0010011000	0000-00000	010000-002	-
18. *Pholcophora a.*	0101010100	11101?0000	1000000100	0010011000	0000-00000	0100011002	-
19. *Tolteca h.*	0100000100	11101?0000	1000000100	0010010000	0000-00000	0100011002	-
20. *Papiamenta l.*	0101010100	0?101?0000	1000000100	0010011000	0000-00000	0100011002	-
21. *Chisosa d.*	0100000100	0?101?0000	1000000100	0010011000	0000-00000	010000-002	-
22. *Priscula b.*	0101010101	00101?0000	1000001100	111-110100	0000-00000	110010-102	-
23. *Priscula u.*	1111010101	00101???00	1000001101	111-110100	0000-00000	110010-102	-
24. *Physocyclus g.*	0101020101	0010100000	1000001101	1111111100	1000-00000	1101110002	-
25. *Physocyclus m.*	0111010101	0???100000	1000001101	111?111100	1000-00000	1101010002	-
26. *Artema a.*	0101020101	01101?0000	1000001100	111-110?00	0001000000	0101110001	0
27. *Smeringopus p.*	0101020101	0110100000	1000001101	111-110100	0001110000	0100010002	-
28. *Crossopriza l.*	0101020101	0111100000	1001001100	111-111100	0001110000	0100010002	-
29. *Holocnemus p.*	0101020101	0111100000	1001001100	111-111100	0001110000	01000?0002	-
30. *Psilochorus p.*	0101010101	00111?0000	1000011101	1111010000	0000-01010	010000-002	-
31. *Psilochorus r.*	0101010101	0???100000	1000001101	1111010000	0000-01010	01000?-002	-
32. *Anopsicus z.*	1100010101	0011100000	1000000100	0011010000	0000-01010	010000-002	-
33. *Modisimus g.*	1111110101	0011100000	1001101101	1111010000	0000-01010	010000-002	-
34. *Modisimus c.*	1111110101	0011100000	1000101100	1111010000	0000-01010	010000-002	-
35. *Ixchela f.*	0111010101	0011100000	1000001100	1111010000	0000-01000	010000-012	-
36. *Ixchela a.*	0111010101	0???100000	1000001100	1111010000	0000-01000	010000-012	-
37. *Aymaria co.*	0111020101	00111?0000	1000001100	1111010000	0000-01000	010000-002	-
38. *Aymaria ca.*	0111020101	0???100000	1000001100	1111010000	0000-01000	01000?-002	-
39. *Chibchea i.*	0111010101	00111?0000	1000001101	1111010010	0000-01000	010000-002	-
40. *Chibchea s.*	0111010101	00111?0000	1000001101	1111010010	0000-01100	010000-002	-
41. *Chibchea a.*	0111010101	00111?0000	1000001101	1111010010	0000-01100	010000-002	-
42. *Mesabolivar j.*	0111010101	00111?0100	1010001100	1111010000	0000-01000	010000-002	-
43. *Mesabolivar e.*	0111010101	0011100100	1010001110	1111010001	0000-01000	010000-002	-
44. *Mesabolivar a.*	0111010101	00111?0100	1010001110	1111010000	0000-01000	010000-002	-
45. *Mesabolivar c.*	0111010101	00111?0100	1010101110	1111010000	0000-01000	010000-002	-
46. *Carapoia f.*	0111010101	00111?0000	1000001101	1111010000	0001001000	010000-002	-
47. *Coryssocnemis s.*	0111010101	00111?0000	1011001100	1111010000	1010-01000	010000-002	
48. *Coryssocnemis g.*	0111010101	0???100000	1011001100	1111010000	1010-01000	01000?-002	-
49. *Mecoloesthus l.*	0111011101	00111?0000	1000001100	1111010000	0000-01000	010000-002	-
50. *Mecoloesthus t.*	0111011101	0???1?0000	1000001100	1111010000	0000-01010	01000?-002	-
51. *Waunana m.*	0111010101	10111?0000	1000111100	1111010000	0000-01010	010000-002	-
52. *Pisaboa s.*	0111010101	00111?0000	1000011100	1111010000	0000-01010	010000-002	-
53. *Pomboa p.*	0011010101	0???1?0000	1000011100	1111010000	0000-01000	01000?-002	-
54. *Litoporus l.*	0011010101	0011100000	1100001100	1111010000	0000-01000	010000-002	-
55. *Litoporus d.*	0011010101	00111???00	1100001100	1111010000	0000-00000	010000-002	-
56. *Otavaloa a.*	0111010101	00111?0010	1000001100	1111010000	0100-01000	010000-002	-
57. *Otavaloa p.*	0111010101	0???1?0010	1000001100	1111010000	0100-01000	01000?-002	-
58. *Tupigea n.*	1111010101	00111?0000	1000011100	1111000000	0000-00011	010000-002	-
59. *Tupigea l.*	1111010101	00111?0000	1000011100	1111010000	0000-00001	010000-002	-
60. *Canaima a.*	1111010101	10111?0000	1000011100	1111010000	0000-01000	010000-002	-
61. *Blancoa p.*	1111010101	00111?0000	1000011100	1111010010	0000-00000	010000-002	-

- = not applicable; ? = unknown.

APPENDIX 2

Preferred Most Parsimonious Tree

One of the trees found by NONA using the matrix in appendix 1 (length = 155; CI = 41; RI = 77). Only nodes discussed in the text are numbered. See Cladistic Analysis section for detailed discussion.



APPENDIX 3

Species of Wrong or Doubtful Generic Position

This appendix lists species that cannot be assigned to any described genus. In some cases the species are well described, and the type material is accessible; in others the types are lost and the descriptions are useless. Thus, this list highlights some of the open questions, and gives some hints as to their possible solution in future projects.

"*Anopsicus*" *banksi* (Gertsch, 1939)

Now that *A. arima* Gertsch has been removed from *Anopsicus* (to *Canaima*, n. gen.), *A. banksi* from the Galápagos Islands is the only South American representative of the genus. The eye pattern and small size were probably the reasons why Gertsch (1939, 1982) first removed the species from *Spermophora*, and then placed it in *Anopsicus*. However, *A. banksi* has no "pup" apophysis on the male palpal femur, and the cheliceral armature is unique in *Anopsicus* (several cones; see figures in Gertsch and Peck, 1992). Thus, the species is almost certainly misplaced, but more material of both sexes should be collected and studied in detail (SEM) before formally removing the species from *Anopsicus* (only the male holotype is known, deposited in Zoologisk Museum, Oslo).

"*Coryssocnemis*" *clara* Gertsch, 1971

This species is closely related to "*C.*" *iviei* Gertsch, and possibly also to "*C.*" *faceta* Gertsch. These Mexican species are certainly not congeneric with the type species of *Coryssocnemis*, and will probably eventually be part of a new genus. All the types are in the AMNH.

"*Coryssocnemis*" *discolor* Mello-Leitão, 1918

The type(s) is (are) apparently lost; the description (of the male) has no illustration. Nothing can be said about the generic position, except that the type locality (Rio de Janeiro) suggests it is not a *Coryssocnemis*.

"*Coryssocnemis*" *faceta* Gertsch, 1971

See "*C.*" *clara* above.

"*Coryssocnemis*" *iviei* Gertsch, 1971

See "*C.*" *clara* above.

"*Coryssocnemis*" *lepidoptera* Mello-Leitão, 1918

The type(s) is (are) apparently lost; only the female has been described, without illustrations. Nothing can be said about the generic position, except that the type locality (Rio de Janeiro) suggests it is not a *Coryssocnemis*.

"*Coryssocnemis*" *occulta* Mello-Leitão, 1918

The type(s) is (are) apparently lost; only the female has been described, without illustrations. Nothing can be said about the generic position, except that the type locality (Rio de Janeiro) suggests it is not a *Coryssocnemis*.

"*Coryssocnemis*" *tigra* Huber, 1998

The very unusual genital morphology of this well-described species from Honduras (Huber, 1998b) suggests a new genus, but more species should be collected before deciding this. Types and paratypes are at the AMNH, at the Muséum d'Histoire Naturelle, Genève, and in the UCR collection.

"*Coryssocnemis*" *viridescens* Kraus, 1955

Both sexes of this Central American species are well described (Kraus, 1955; Huber, 1998a), but the generic position is unclear. The types are in the SMF; further material is in the UCR collection.

"*Kambiwa*" *anomala* (Mello-Leitão, 1918)

See Note under *Kambiwa* description, p. 87.

"*Litoporus*" *agricola* Mello-Leitão, 1922

The type(s) is (are) apparently lost; only the female has been described, without illustrations. Nothing can be said about the generic position.

"*Mesabolivar*" *aurantius* (Mello-Leitão, 1940)

See Composition under *Mesabolivar* description, p. 191.

"*Mesabolivar*" *globulosus* (Nicolet, 1849)

See Composition under *Mesabolivar* description, p. 191.

"*Pholcophora*" *bahama* Gertsch, 1982

See redescription, p. 334.

"*Pholcophora*" *maria* Gertsch, 1977

See redescription, p. 336.

"*Pholcophora*" *juruensis* Mello-Leitão, 1922

This is a large pholcid (7 mm body length!) with deep thoracic groove, and globular abdomen, i.e., neither a *Pholcophora* nor a ninetine. Mello-Leitão's illustrations (1922: figs. 3–4) suggest it might be *Physocyclus globosus*, but actually identity and position are obscure. The type material is apparently lost.

"*Physocyclus*" *tigrinus* (Taczanowski, 1874)

See Composition under *Priscula* description (p. 129), and discussion of *Physocyclus* (p. 149).

"*Physocyclus*" *viridis* Mello-Leitão, 1940

See discussion of *Physocyclus*, p. 149.

"*Psilochorus*" *bruneocyaneus* Mello-Leitão, 1941

The type(s) is (are) apparently lost; only the female has been described, without illustrations. Nothing can be said about the generic position, except that the type locality (Rio Uruguay: Ilha Yolantim) suggests it is not a *Psilochorus*.

"*Psilochorus*" *marcuzzii* Caporiacco, 1955

The original figures of the palp suggest an affinity with *Mesabolivar*, but the generic position is obscure. The type of this Venezuelan species might be in Caracas, Venezuela. (I have not tried to borrow it.)

"*Psilochorus*" *minimus* Schmidt, 1956

The single known female specimen arrived in Hamburg, Germany, with bananas from Ecuador. I have not examined the type (which should be in the SMF), but doubt the generic position.

"*Psilochorus*" *nigromaculatus* Kulczynski, 1911

The three "*Psilochorus*" species from Australia (*sphaeroides*, *wunderlichi*) and New Guinea (*nigromaculatus*) are certainly misplaced (Huber, 1998a, 1998d), but their affinities are obscure. All types probably still exist.

"*Psilochorus*" *sectus* Mello-Leitão, 1939

The type(s) is (are) apparently lost; only the female has been described, without illustrations. Nothing can be said about the generic position, except that the type locality (Campina Grande, Paraíba, Brazil) suggests it is not a *Psilochorus*.

"*Psilochorus*" *sphaeroides* (L. Koch, 1867)

See "*P.*" *nigromaculatus* above.

"*Psilochorus*" *taperae* Mello-Leitão, 1929

The types are apparently lost, and the description of this Brazilian (Pernambuco) species reveals nothing about possible affinities.

"*Psilochorus*" *wunderlichi* Deeleman-Reinhold, 1995

See "*P.*" *nigromaculatus* above.

"Spermophora" maculata Keyserling, 1891

I have seen the female holotype [from Blumenau, Santa Catarina, Brazil; no date (Hetschko), in BMNH (1890.411.8336)]. It is completely destroyed; the only thing I could identify among the dirt was a squashed abdomen with spinnerets but without genital area. The original description (Keyserling, 1891) says that the clypeus is about as high as an anterior eye, which would be completely unique for pholcids. Otherwise I see no evidence supporting the position of the species within pholcids, and the drawing of the epigynum is too simple to recognize the species. Mello-Leitão (1922) assigned a male pholcid from "Nictheroy" (Niteroi), Rio de Janeiro, to the species, probably without consulting the type, and with a useless figure of the pedipalp. I have not been able to locate any of the material published in that paper, but I regard it as highly improbable that the male is in fact conspecific with the type of *S. maculata*. Later, Mello-Leitão (1940e) cited material from Santa Catarina, São Paulo, Rio de Janeiro and Paraná. Finally, the "redescriptions" by Moenkhaus (1898) and Mello-Leitão (1918) are simply translations of Keyserling's original description, without new information.

APPENDIX 4

List of Pholcid Genera Worldwide

Genus	Previous count	New count: World-wide	New count: New World
Newly synonymized			
1. *Anomalaia*	1	0	0
2. *Blechroscelis*	16	0	0
3. *Myrmidonella*	2	0	0
Valid genera			
1. *Anopsicus*	65	63+1?	63+1?
2. *Artema*	4	4	1
3. *Aucana*	0	5	4
4. *Aymaria*	0	7	7
5. *Belisana*	1	1	0
6. *Blancoa*	0	2	2
7. *Bryantina*	2	2	2
8. *Calapnita*	4	4	0
9. *Canaima*	0	2	2
10. *Carapoia*	1	4	4
11. *Ceratopholcus*	1	1	0
12. *Chibchea*	0	16	16
13. *Chisosa*	0	2	2
14. *Coryssocnemis*	23	5+8?	5+8?
15. *Crossopriza*	6	6	1
16. *Enetea*	0	1	1
17. *Galapa*	0	2	2
18. *Gertschiola*	1	2	2
19. *Guaranita*	0	3	3
20. *Holocneminus*	2	2	0
21. *Holocnemus*	4	4	1
22. *Hoplopholcus*	12	12	0
23. *Ibotyporanga*	1	1	1
24. *Ixchela*	0	5	5
25. *Kaliana*	0	1	1
26. *Kambiwa*	0	1+1?	1+1?
27. *Leptopholcus*	10	12	4
28. *Litoporus*	13	9+1?	9+1?
29. *Mecoloesthus*	1	13	13
30. *Mesabolivar*	1	33+2?	33+2?
31. *Metagonia*	68	79	79
32. *Micromerys*	3	2	0
33. *Micropholcus*	1	1	1
34. *Modisimus*	58+5F	57+5F	57+5F
35. *Mystes*	1	1	0
36. *Nerudia*	0	1	1
37. *Ninetis*	2	3	0
38. *Otavaloa*	0	5	5
39. *Panjange*	6	6	0
40. *Papiamenta*	0	2	2
41. *Paramicromerys*	1	1	0
42. *Pholciella*	1	1	0
43. *Pholcoides*	1	1	0
44. *Pholcophora*	14+3F	3+3F+3?	3+3F+3?
45. *Pholcus*	110	109	3
46. *Physocyclus*	23	19+2?	18+2?
47. *Pisaboa*	0	4	4
48. *Pomboa*	0	3	3
49. *Priscula*	12	17	17
50. *Psilochorus*	49	33+8?	32+8?
51. *Serratochorus*	1F	1F	1F
52. *Smeringopina*	8	8	0
53. *Smeringopus*	22	22	1
54. *Spermophora*	42	40+1?	1+1?
55. *Spermophorides*	27	27	0
56. *Stenosfemuraia*	1	1	1
57. *Systenita*	1	1	1
58. *Tainonia*	0	1	1
59. *Teuia*	0	1	1
60. *Tolteca*	0	2	2
61. *Trichocyclus*	3	3	0
62. *Tupigea*	0	8	8
63. *Uthina*	2	2	0
64. *Waunana*	0	4	4
Total	636	729	466

Numbers of species included previously, new count of species worldwide, and new count of New World species are given. F = fossil; ? = incertae sedis; see appendix 3.

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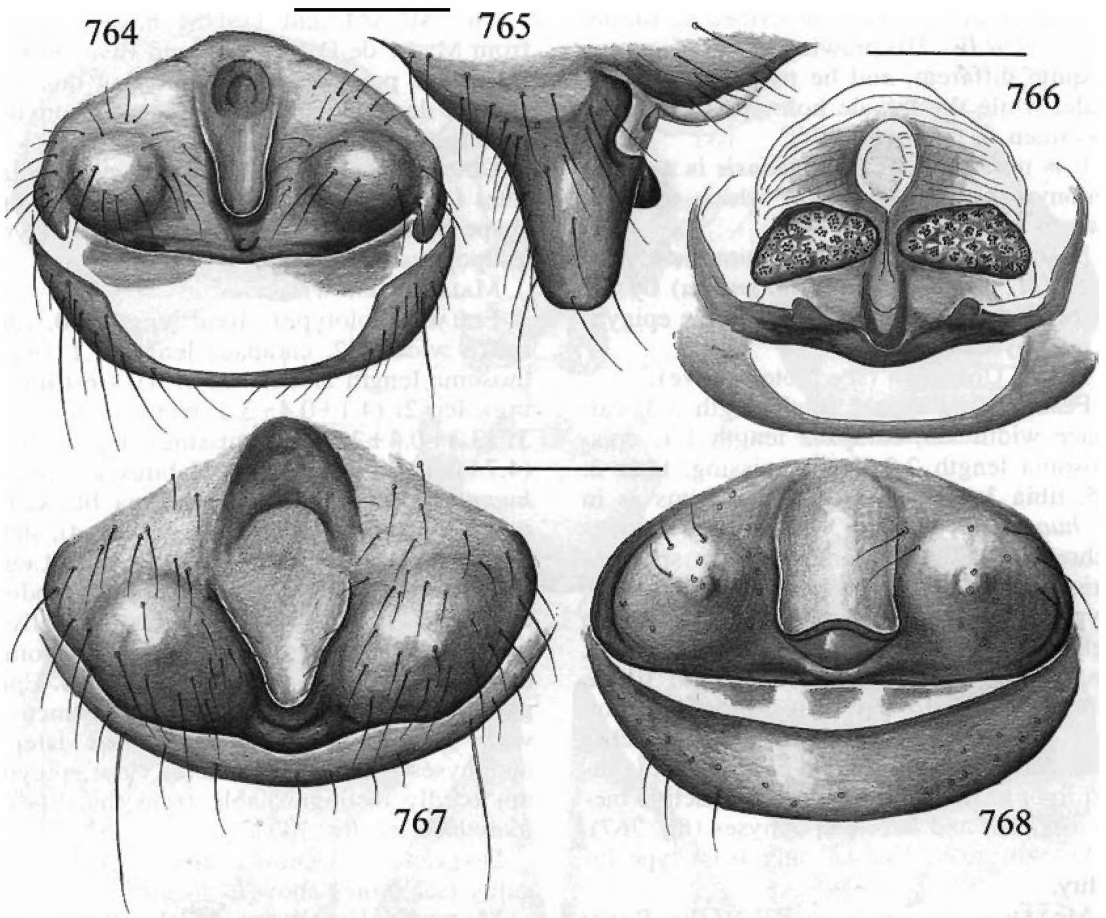

Figs. 764–768. *Mesabolivar* **spp. 764–766.** *M. junin*, **n. sp. 764–765. Epigynum, ventral and lateral views. 766. Epigynum, dorsal view. 767.** *M. paraensis* **(Mello-Leitão), female holotype: epigynum, ventral view. 768. M.** *exlineae* **(Mello-Leitão), female holotype: epigynum, ventral view. Scale lines: 0.3** mm.

thicker than others; all legs without spines, without curved and vertical hairs; retrolateral trichobothrium of tibia 1 at 3%; tarsus 1 (paratype) with over 35 pseudosegments. **Opisthosoma** shape as in M. huambisa (cf. fig. 738), gray with blackish spots dorsally, genital plate light brown; **gonopore** without epiandrous spigots; ALS with only one **piriform** gland spigot each.

VARIATION: Tibia 1 in male paratypes: 10.7, 12.0; one male has on the opisthosoma also some white spots among the black spots.

FEMALE (paratypes): Total length 3.6, 4.1; tibia 1: 6.5, 6.8. In general very similar to male. Epigynum brown, with median pocket and pair of high, roundish apophyses laterally (figs. 764–765); dorsal view as in fig. 766.

DISTRIBUTION: Known only from type locality.

MATERIAL EXAMINED: PERU: Junin: Utcuyacu: types above.

Mesabolivar paraensis (Mello-Leitão, 1947), new combination

Figure 767

Coryssocnemis paraensis **Mello-Leitão, 1947b: 161–162, fig. 7.**

TYPE: Female holotype from Breves, Pará, Brazil; no date (F. O. Pickard-Cambridge), in BMNH (B.M.97.9.21.501-508), examined.

NOTES: It is not entirely clear whether this